

# INDEX

- ABBADIE (M. AND MME. D'), Gift to Paris Academy of Sciences by, 421
- Abbe (Prof. Cleveland), Smithsonian Institution Documents, 6; Ice Columns in Gravelly Soil, 20; Charts of Storm Frequency, 140
- Abbott (Dr. E. A.), Antipodean Retrenchment, 249
- Abbott (Geo.), Potstones found near Seaford, 315
- Abercromby (Hon. Ralph), Prize offered for study of "Southerly Buriester" by, 77
- Aberration, the Constant of, Prof. Chandler, 112
- Aberration, a Determination of the Constant of, Prof. Geo. C. Comstock, 460
- Abney (Capt., F.R.S.), Failure of Photographic Law of Equal Chemical Action, 285; Colours of Sky, Sun, Cloud, and Candle Light, 333
- Abraham (M.), a New Standard Condenser, 206
- Academy, Belgian, Prize Subjects for 1894, 107
- Acephala, Elimination of Foreign Bodies in, Henri Coupin, 484
- Acoustics: The Motion of Vibrating Strings, Messrs. Krigar Menzel and Raps, 324; Sound Interference Illustrated, C. J. Woodward, 159; Apparatus for Demonstrating Oscillation of Air, Prof. V. Dvorak, 13
- Acquired Characters, Non-Inheritance of, Dr. Alfred R. Wallace, F.R.S., 267; Dr. C. Herbert Hurst, 368
- Actinometer, the Electrochemical, M. Rigollot, 38
- Adams (Prof. F. D.), the Norian Rock of Canada, 298
- Adams (Prof. John Couch), Memorial to, 107
- Adelaide, Meteorological Observations (1890) in, 132
- Adler (Hanna), a Substitute for Ampère's Swimmer, 370
- Adriatic, Earthquake on Shores of, 376
- Aerial Navigation, 502
- Aëronautics: Thermometer Soundings in the High Atmosphere, W. de Fonville, 160; New Flying Apparatus, Otto Lilienthal, 571; Chicago Congress on Aerial Navigation, 596
- Ætiology and Life-History of some Vegetal Galls and their Inhabitants, on the, C. B. Rothera, 575
- Africa: Death and Obituary Notices of W. Cotton Oswell, 62; the Arrow-Poison of East Equatorial Africa, Dr. T. R. Fraser, F.R.S., and Dr. Joseph Tillie, 92; Oil Rivers Protectorate renamed Niger Coast Protectorate, 112; Adoption of Responsible Government by Natal, 112; Gun and Camera in Southern Africa, H. Anderson Bryden, 125; Capt. Stairs' Katanga Expedition, Dr. Moloney, 135; Report of South African Museum, 207; South-West Africa, Count Pfeil, 301; the Alleged Death of Emin Pasha, 356, 481; Return of Rev. R. P. Ashe, 356; Geographical Society established at Tunis, 356; Projected Railway in French Congo, 380; Commencement of the Central African Telegraph Line, 380; Habits of South African Animals, Dr. Alfred Wallace, F.R.S., 390; Dr. Gregory's Expedition to Lake Baringo, 397; Return of Dr. J. W. Gregory, 618; Return of Mr. Selous to Mashonaland, 426; Discovery of Temple on the Limpopo, R. M. W. Swan, 426; Proposed Exploration of Uganda by Mr. Scott Elliott, 444; Death of Surgeon-Major Parke, 481; Geology of Central East Africa, Walcot Gibson, 533; Dr. Baumann's Exploration to North-East of Lake Tanganyika, 548; Resurvey by Mr. Mohun of Lake Leopold II., 601
- Afterglows in Spain, Prof. Augusto Arcimis, 29
- Agassiz (Louis), his Life and Work, Charles Frederick Holder, Prof. T. G. Bonnev, F.R.S., 52
- Agriculture: Agricultural Education, Durham College of Science Scholarships, 36; Photographs Relating to Working of Rothamsted Laboratory, 63; the Rothamsted Jubilee Fund, 228; the Rothamsted Jubilee, 289, 296, 327; the Quantities of Water contained in Arable Lands after a Prolonged Drought, MM. Demoussy and Dumont, 72; the Principles of Agriculture, G. Fletcher, 73; Journal of Royal Agricultural Society of England, 91; the Disadvantages of Irrigation, W. Roe, 110; Hawks and Owls the Farmer's Friends, Dr. A. K. Fisher, 133; Agriculture-Teaching in Russian Schools, 156; the Future of British Agriculture, Prof. Sheldon, 174; Relation of Number of Eyes on Potato Seed Tuber to Crop obtained, J. C. Arthur, 353; Cattle-Poisoning Species of *Homeria* (Cape Tulip) in Victoria, Dr. McAlpine, 378; Statistics for 1891-2 of Cattle Losses in Madras, 424; Statue of Duhamel-Dumonceau, 596
- Air Pump, a New Form of, Prof. J. J. Thompson, 529
- Aitken (John), Breath Figures, 71
- Alaska and the Adjacent Islands, Grasses of the Pacific Slope, including, Dr. Geo. Vasey, 411
- Alaska, the Alleged Undiscovered Island off North, 356
- Algæ, some *Protococcoidæ*, Al. Artari, 92
- Allaire (H.), Chloroborate of Iron, 119
- Allen (E. J.), Nephridia of Decapod Crustacea, 115
- Allen (J. Romilly), Origin and Development of Early Christian Art, 558
- Alpine Guide, an, 314
- Alpine Lakes, Glacier Theory of, Graham Officer, 198; Dr. Alfred Russel Wallace, F.R.S., 198
- Alps, the Iodine Value of Sunlight in the High, Dr. S. Rideal, 529
- Altehoefer (Herr), Bactericidal Action of Peroxide of Hydrogen, 599
- Altschul (Herr), Critical Constants of Fatty and Aromatic Hydrocarbons, 206
- Amagat (E. H.), Crystallisation of Water by Decompression below Zero, 632
- Amazon Basin Scientific Expedition, Projected, 601
- Amber, Burmite, a New Variety of, Dr. Noetling, 13
- Amber, the Indian Origin of Ancient, A. B. Meyer, 422
- America: An American Text-Book of Physics, Geo. F. Barker, Prof. Oliver Lodge, F.R.S., 1; Astronomy Popularised in America, 15; American Meteorological Journal, 20, 140, 239, 583, 631; American Academy of Arts and Sciences, 38; American Journal of Science, 70, 187, 309, 431, 535, 631; American Journal of Mathematics, 140, 606; University and Educational Endowment in America, W. T. Thiselton-Dyer, F.R.S., 248; North American Butterflies, Samuel Hubbard Scudder, W. F. Kirby, 338; the Fungus Gardens of certain South American Ants, John C. Willis, 392; the Geography of South America, 425; American Cyclone of August 28 and 29, the, 444; American Association for the Advancement of Science, Dr. William H. Hale, 460; Meeting at Madison, Wisconsin, 460; Dr. Daniel G. Brinton on the Earliest Men, 460; Section A (Astronomy and Mathematics), Prof. Doolittle on Variations of Latitude, 451; Latitude Determination at Bethlehem in 1892-3, 460; Prof. Geo. C. Comstock on a Determination of the Constant of Aberration, 460; Section B (Physics), Prof. Wm. A. Rogers on the Morley Interferential Comparator, 461; Profs. Macfarlane and G. W. Pierce on the Electric Strength of Solid Liquid and Gaseous Dielectrics, 461; Joseph O. Thompson on Fatigue in the Elasticity of Stretching, 461; Section C (Chemistry), Prof. Morley's Final Determination of the Atomic Weight of Oxygen, 461; Section D (Mechanical Science and Engineering), Prof. J. I. Stevenson on the Use of the term Catskill, 462; Frank Leverett on Changes of Drainage in the Rock

- River Basin in Illinois, 462; Section F (Zoology), Prof. H. F. Osborn on the Mammals of the Upper Cretaceous, 462; Section G (Botany), Evolution and Classification, C. E. Bessey, 534; Section H (Anthropology), Dr. Brinton on the Mexican Calendar System, 462; Section I (Economic Science and Statistics), Theories of the Origin of Mountain Ranges, Prof. Le Conte, 551; Geological Society of America, 578; Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army, Dr. A. T. Myers, 611
- Ammonia Vapour as a Disinfectant, Herr Rigler, 298
- Amœbæ, Artificial, Prof. Bütschli's, Dr. John Berry Haycraft, 594
- Amphioxus and its Development, the, Dr. B. Hatschek, 613
- Amphipods, Swarms of, Prof. W. A. Herdman, F.R.S., 28
- Ampère's Swimmer, a Substitute for, Alfred Daniell, 294, 370
- Amsterdam Royal Academy of Sciences, 96, 168, 312
- Analytical Statics, a Treatise on, Edward John Routh, F.R.S., Prof. A. G. Greenhill, F.R.S., 609
- Anatomy, Human and Comparative, at Oxford, Prof. E. Ray Lankester, F.R.S., 616
- Anderson (Dr. William, F.R.S.), the Interdependence of Abstract Science and Engineering, 65
- Andouard (A.), the Desert Sands of Lower Egypt, 336
- Anemometrical Observations at Vienna, 1873-92, Dr. J. Hann, 108
- Aneroid, the Corry "Protected," Edward Whympers, 160
- Anglo-Saxon Remains and Coeval Relics from Scandinavia, on, Prof. Hans Hildebrand, 557
- Angot (M.), the Eiffel Tower Experiments, Variation with Height of the Meteorological Elements, 12
- Animal Heat and Physiological Calorimetry, Prof. Rosenthal, 88
- Animal Intelligence, the Limits of, Prof. C. L. Morgan, 350
- Animal Life, Types of, St. George Mivart, F.R.S., 148
- Animals, the Intelligence of, Charles William Purnell, Dr. Alfred R. Wallace, 73
- Annales des K. K. Naturhistorischen Hofmuseums, 92
- Anomalous Dispersion, a Mechanical Analogue of, 527
- Antarctic Exploration: Cruise of the Dundee Whalers, W. S. Bruce and C. M. Donald, 555
- Antarctic Whaler *Balena*, Return of, 112
- Antarctic Whaling Expedition, Norwegian, 574
- Antennæ, Trilobites with, at last! H. M. Bernard, 582
- Anthrax Bacilli, Production of Sporeless, M. Phisalix, 545
- Anthropology: the Population of France, 108; Anthropological Institute, 118; Index to Publications, 482; the Baram District of Borneo, Charles Hose, 118; Anthropological Society of Washington, Prize Subjects for 1893, 229; Racial Dwarfs in the Pyrenees, J. S. Stuart-Glennie, 294; Strange Heathen Ceremony at Raiates, Miss Teuira Henry, 398; the Ancient Burial Mounds of Japan, Romyn Hitchcock, 398; the Breaking of Clay Vessels as a Funeral Rite in Modern Greece, Prof. N. G. Politis, 445; Dr. Brinton on the Earliest Men, 460; Opening Address in Section H of the British Association, by Dr. Robert Munro, 503; Ethnographic Aspect of Dancing, Mrs. Lilly Grove, 557; on Anglo-Saxon Remains and Coeval Relics from Scandinavia, Prof. Hans Hildebrand, 557; Origin and Development of Early Christian Art, J. Romilly Allen, 558; Ethnographical Notes on the Congo Tribes, Herbert Ward, 558; the "Mad Head," Dr. Crochley Clapham, 558; on the Structure of Lake-dwellings, Dr. Munro, 558; on a British Village of Marsh Dwellings, Arthur Bulleid, 558; Chicago International Congress of Anthropology, 570
- Anthropometrical Measurements, A. Bertillon's System of, 250
- Antibes, Four Simultaneous Water-spouts at, M. Naudin, 360
- Antipodean Retrenchment, Dr. E. A. Abbott, 249
- Antiquities, Assyrian, the Thieving of, 343; H. Rassam, 508, 540
- Antiquities, the Thieving of, Prof. W. M. Flinders Petrie, 613
- Ants, the Use of, to Aphides and Coccidæ, Dr. Geo. J. Romanes, F.R.S., 54; Alfred O. Walker, 54
- Ants, the Sound-producing Organs of, Dr. D. Sharp, F.R.S., 64
- Ants, the Fungus Gardens of certain South American, John C. Willis, 392
- Antwerp Exhibition, "Castle in the Air" for forthcoming, 569
- Apex of the Sun's Way, the, Prof. H. G. Van de Sande Bakhuysen, 401
- Aphides and Coccidæ, the use of Ants to, Dr. Geo. J. Romanes, F.R.S., 54; Alfred O. Walker, 54
- Aphis, What becomes of the, in the Winter? J. A. Sharpe, 77
- April Meteors, the, W. F. Denning, 5
- Arago, a New Statue of, 154, 223
- Ararat, Mount, Ascent of, H. F. B. Lynch, 548
- Arcangeli (Dr. G.), Growth of Leaf-stalk of Nymphaeaceæ, 92
- Archæology: Congress of Archæological Societies, 251; the Archæological Survey of England, 272; the Thieving of Assyrian Antiquities, H. Rassam, 343, 508, 540; the Thieving of Antiquities, Prof. W. M. Flinders Petrie, 613
- Archibald (E. Douglas), the Greatest Rainfall in Twenty-four Hours, 77, 317; the Big and Little Monsoons of Ceylon, 175
- Architecture: Prehistoric Naval Architecture of Northern Europe, G. H. Boehmer, 274; Institution of Naval Architecture, 277; Fast Ocean Steamships, Dr. F. Elgar, 278; Experiments on Combination of Induced Draughts and Shot Air, applied to Marine Boilers, J. D. Ellis, 278; Transmission of Heat through Boiler Plates, A. Blechynden, 278; Water Tube Boilers, J. T. Milton, 278; the Bulkhead Question, G. H. Bryan, 279; the Mechanics of Architecture, E. Wyndham Tarn, 515
- Arcimis (Prof. Augusto), Afterglows in Spain, 29
- Arctic Exploration: Death of Capt. Richard Pike, 82; the Race to the North Pole, Dr. H. R. Mill, 250; an Expedition to the North Magnetic Pole, Col. W. H. Gilder, 250; Sailing of Dr. Nansen's Expedition (June 24, 1893), 205; Dr. Nansen's Expedition, 301, 425, 574; Departure of Lieut. Peary on his Second Expedition, 234; Departure of Mr. F. G. Jackson for Nova Zembla, 327; the Steam Whaler *Newport's* Voyage, 574
- Arctic Problem, the, and Narrative of the Peary Relief Expedition of the Academy of Natural Sciences of Philadelphia, Prof. Angelo Heilprin, 434
- Aren's (Herr), Method of Detecting Cholera Bacillus in Water, 523
- Argentina and Chile, Flora and Fauna of, Dr. Philippi, 619
- Argyll, a Vertebrate Fauna of, and the Inner Hebrides, J. A. Harvie-Brown and T. E. Buckley, 123
- Aristotle on Field Voles, 37
- Arithmetic, Algebra, Euclid and Trigonometry, Enunciations in, P. A. Thomas, 564
- Arloing (S.), Microbian Origin of Purulent Surgical Infection, 407
- Armstrong (Prof. Henry E., F.R.S.), the Appreciation of Science by German Manufacturers, 29; the Conditions Determinative of Chemical Change, 237; Ortho-, para-, and peri-disulphonic derivatives of Naphthalene, 262; the Nature of Depolarisers, 308
- Arné (Riccardo), Diathermanous Power of Ebonite for Heat Waves, 299
- Arnold-Bemrose (Mr.) on the Derbyshire Toadstone, 532
- Arran, Composite Dykes in, Prof. J. W. Judd, F.R.S., 285, 286
- Arrow-Poison of East Equatorial Africa, the, Dr. T. R. Fraser, F.R.S., and Dr. Joseph Tillie, 92
- Arsenic, Products of Sublimation of, Dr. Retgers, 510
- Arsonval (M. d'), Physiological and Therapeutic Effects of Injection of Orchitic Liquid, 23; Duration of Excitability of Nerves and Muscles after Death, 240; Electric Excitability of Muscles after Death: the Myophone, 399; Experiments on Effect of Strong Alternating Magnetic Fields on Animals, 481; Dr. W. S. Hedley on M. d'Arsonval's Work, 481
- Art, the Department of Science and, 403
- Art, Early Christian, Origin and Development of, J. Romilly Allen, 558
- Artari (A. L.), Some Protococcidæ, 92
- Artificial Immunity and Typhoid Fever, 211
- Artistic Rows of Elms, Rev. Alex. Freeman, 223
- Ascherson (Herr), the Metallic-looking Deposits on Teeth of Ruminating Animals, 231
- Ashwell (Frank), Warming and Ventilating, 556
- Asia, General Glaciation of, Prince Kropotkin, 533
- Asiatic Quarterly Review, 301
- Asphyxia, on the Physiological Action of the Inhalation of Oxygen in, 575
- Assyrian Antiquities, the Thieving of, 343; H. Rassam, 508, 540
- Association for Advancement of Science, Australasian, 569
- Asterisms, the Early, J. Norman Lockyer, F.R.S., 438, 518
- Astronomy: the April Meteors, W. F. Denning, 5; Daylight Meteor, March 18, J. E. Clark, 54; Meteor Showers, 15, 254, 326; Meteor Observations, W. F. Denning, 135; an

Ascending Meteor, Prof. Von Niessl, 209; a Remarkable Meteor, J. Lloyd Bozward; J. Lovel, 567; August Meteors, 601; the Genesis of Nova Aurigæ, Richard A. Gregory, 6; Nova (T) Aurigæ Spectrum, W. W. Campbell, 524; Our Astronomical Column, 15, 39, 61, 81, 111, 135, 158, 183, 208, 233, 254, 276, 300, 326, 355, 379, 401, 425, 447, 483, 512, 524, 548, 573, 600, 622; South Polar Cap of Mars, Prof. George Comstock, 15; the Brightness of the Major and Minor Planets, Dr. G. Müller, 15; Astronomy Popularised in America, 15; Optical Tests for Objectives, Dr. Ludwig Mach, 16; Photograph of a Bolid, 16; Meridian Circle Observations, 39; the Lunar Atmosphere, 40; the Recent Solar Eclipse, 40; Prof. T. E. Thorpe, F.R.S., 53; the Total Solar Eclipse (April, 1893), M. Deslandres, 81; M. Bigourdan, 111; M. N. Coculesco, 135; Observations made during the Eclipse of April, 1893, 326; a Method of Detecting the Existence of Variable Stars by Continuous Photometric Observations, Dr. J. Joly, F.R.S., 47; Distortion of Photographic Star Images due to Refraction, Prof. A. A. Rambaut, 47; Roche's Limit, Prof. G. H. Darwin, F.R.S., 54; Finlay's Comet (1886 VII.), 51, 81, 112, 135, 158, 184, 208, 276, 300, 326, 355; M. Schulhof, 233, 254; Comet Finlay and the Præsepe, 512; the Greatest Brilliance of Venus, Dr. G. Müller, 61; L'Astronomie, 62, 158, 254; the Lunar Atmosphere, M. Spée, 62; Bulletin Astronomique for April, 62; Variable Star Nomenclature, 81; the Moon's Surface, G. K. Gilbert, 82; Amédée Guillemin, 82; the Satellites of Jupiter, Prof. W. H. Pickering, 81, 209; Observation on Jupiter, M. Lumsden, 158; Sun, Moon, and Stars: Astronomy for Beginners, A. Gilberne, 101; Death of Dr. Charles Pritchard, F.R.S., 107; Aurora Observations, 112; the Constant of Aberration, Prof. Chandler, 112; the Astronomical Day, 112; Royal Observatory, Greenwich, 112; Washburn Observations, 135; the Cause of Sunspots, Dr. G. J. Storey, F.R.S., 143; Determinations of Gravity, 158; Solar Observations at the Royal College, Rome, Prof. Tachini, 158; a New Variable  $\alpha$  Cygnus, 183; a Bright Comet, 184, 233; Observations of Nebulae, Dr. Rudolf Spitaler, 184; the Yerkes Telescope, 184; the Smithsonian Report for Year ending 1892, 184; the Smithsonian Astrophysical Observatory, 184; Practical Astronomy, P. S. Michie and F. S. Harlow, 197; Stars having Peculiar Spectra, 208; Stars with Remarkable Spectra, T. E. Espin, 233; the Sun's Motion through Space, 208; the Period of Rotation of Venus, 233; the Newall Telescope, 233; Johnston's Notes on Astronomy, 233; the Hodgkins Fund Prizes, 233; a New Comet, 254, 622; Ephemeris of the New Comet, Prof. E. Lamp, 276; the Discovery of the New Comet, 300; Himmel und Erde for July, 254; for August, 355; Observations of the Planet Victoria, 276; Difference of Longitude between Vienna and Greenwich, 277; Photographs of the Milky Way, Prof. E. E. Barnard, 277; Changes in the Spectrum of  $\beta$  Lyre, 301; the Variable Star  $\gamma$  Cygni, Prof. N. C. Duncn, 301; New Determination of the Constant of Universal Attraction, 301; the Coronal Atmosphere of the Sun, 301; Variable Stars, 301; Remarks on Herschel's Second Method of Calculating Probable Orbit of Binary Star, J. A. C. Oudemans, 312; the Astronomical History of On and Thebes, J. Norman Lockyer, F.R.S., 318, 371; Rordame-Quénisset Comet, 1893, 326, 401; Herr E. Lamp, 355; the Spectrum of the Rordame-Quénisset Comet, Prof. Campbell, 379; Earth Movements, Herr E. von Rebeur-Paschwitz, 326; the Observatory of Yale University, 327; Astronomische Gesellschaft, 327; Observations of Auroræ, Dr. M. A. Veeder, 355; New Determination of the Constant of Universal Attraction, 355; Total Solar Eclipses, 355; Photography of Comet  $\delta$ , 1893, F. Quénisset, 360; Old and New Astronomy, Richard A. Proctor, 361; the Origin of New Stars, Prof. A. W. Bickerton, 379; Atmospheric Refraction and Star Photographs, Prof. A. A. Rambaut, 379; Astronomy Popularised, 380; Comet Appearances in the Year 1892, Prof. H. Kreutz, 380; Astronomical Photography, Rt. Hon. Lord Rayleigh, F.R.S., 391; the Cordoba Durchmusterung, 401; a Simple Equatorial Mounting, 401; a Remarkable Source of Error, 401; the Apex of the Sun's Way, Prof. H. G. Van de Sande Bakhuysen, 401; the Origin of New Stars, 402; an Old Device Resuscitated, F. W. Levander, 416; Old and New Astronomy, A. C. Raneyard, 416; the Reviewer, 416; Honorary Distinctions, 425; a Meteor, 425; a Bequest to

Astronomy, 425; Old and New Astronomy, Mrs. S. D. Proctor-Smyth, 438; the Reviewer, 438; the Early Asterisms, J. Norman Lockyer, F.R.S., 438, 518; the Transit of Venus of 1874, 447; the Planet Venus, Ellen M. Clerke, 447; Memorie della Società, &c., 448; Variations of Latitude, Prof. C. L. Doolittle, 451; Latitude Determination at Bethlehem, 1892-93, Prof. Doolittle, 460; Astronomical Photography, Dr. A. A. Common, F.R.S., 459; H. F. Newall, 517; Sir Robert S. Ball, F.R.S., 541; a Determination of the Constant of Aberration, Prof. Geo. C. Comstock, 460; Mr. Tebbutt's Observatory, 483; Universal Time in Australia, 484; Bishop's Ring, T. W. Backhouse, 509; Double Star Measures, 512; Pubblicazioni della Specola Vaticana, 512; Fireball of January 13, 1893, Prof. H. A. Newton, 524; Report of the Committee on Solar Radiation, 525; the Moon's Atmosphere and the Kinetic Theory of Gases, G. H. Bryan, 526; Shooting Stars of August, 1893, P. F. Denza, 535; the Constellations of the Far East, Kumagu-u Minakata, 541; on the Parallax of the Planetary Nebula B.D. + 41° 4004, 548; Solar and Lunar Ephemeris for Turin, 548; Observatory on Mont Blanc, 549; Astronomy at the World's Fair, 573; the Aurora of July 15, 1893, M. A. Veeder, 573; New Variable Stars in Cygnus, Herr Fr. Deichmüller, 573; Deductions from Pulkowa Latitude Observations, S. Folie, 583; the Scintillation of Stars, M. Dufour, 600; a Universal Telescope Stand, 600; Popular Astronomy, 600; Astronomy of the Fellahin of Palestine, P. J. Baldensperger, 601; Determination of Geographical Longitude, Herr C. Runge, 623; Astronomy and Astro-Physics at Chicago, 623; a New Astronomical Observatory at Manila, 623; the Visibility of Venus to the Naked Eye, 623; Meyer's Conversational Lexicon, 623

Asymmetrical Frequency Curves, Prof. Karl Pearson, 615

Atlantic Water, Density and Alkalinity of, J. Y. Buchanan, 168

Atlas, the Universal, 147

Atlal, or Throwing Stick, the Mexican, P. T. Mason, 597

Atmosphere, the General Motions of the, W. L. Dallas, 341

Atmosphere, High, Thermometer Soundings in the, W. de Fonvielle, 160

Atmosphere, the Lunar, 40; M. Spée, 62

Atmosphere of the Sun, the Coronal, 301

Atmospheric Oxygen, Origin of, T. L. Phipson, 384

Atmospheric Phenomenon in the North China Sea, Capt. Chas. J. Norcock, 76

Atmospheric Refraction and Star Photographs, Prof. A. A. Rambaut, 379

Atom, Prof. Ebert's Method of Estimating the Radiating Power of an, 527

Atomic Weight of Oxygen, Prof. Morley's Final Determination of the, 461

Aubel (M. van), Resistance of Bismuth, 571

Augen-Structure in Relation to the Origin of Eruptive Rocks and Gneiss, J. G. Goodchild, 532

August Meteors, the, 1893, W. F. Denning, 374

Aurora Observations, 112

Aurora of July 15, 1893, M. A. Veeder, 573

Aurora Borealis, Observation of an, M. le duc Nicolas de Leuchtenberg, 608

Auroræ, the Observation of, Dr. M. A. Veeder, 355

Ausdehnungslehre, Grassman's, Prof. R. W. Genese, 517

Australia, Journey of Guy Boothby across, 40; Prize offered by Hon. Ralph Abercromby for Study of "Southerly Burster," 77; the New Flora and the Old in Australia, A. G. Hamilton, 161; the Great Barrier Reef of Australia, its Products and Potentialities, W. Saville Kent, Prof. Alfred C. Haddon, 217; Australasian Association for Advancement of Science, 229, 569; Universal Time in Australia, 484; The Hour-Zone System of Time-reckoning for, 601; Australian Museum, Annual Report for 1892, 621

Austria, Disastrous Floods in, 376

Automatic Balance of Reciprocating Mechanism, Mr. Beaumont, 556

Automatic Gem Separator, an, Wm. S. Lockhart, 557

Autumn of 1893, Spring and, Rt. Hon. Sir Edward Fry, F.R.S., 509

Aveling (Edward), an Introduction to the Study of Geology, 292

Axioms of Dynamics, the Fundamental, Prof. Oliver Lodge, F.R.S., 62, 101, 126, 174; Edward T. Dixon, 101, 149; Prof. A. W. Rücker, F.R.S., 126; Prof. J. G. MacGregor, 126, 223

- Aymonnet (M.), Periodical Maxima of Spectra, 536  
 Ayrtton (Prof.), Photometry, 190  
 Azores, Hurricane at, 445
- Babylonian Cosmology, P. Jensen, 2  
 Bacchu-Marsh Boulder Beds, the, Graham Officer, Lewis  
 Balfour, 342; R. D. Oldham, 416  
 Backhouse (I. W.), Bishop's Ring, 509  
 Bacteriology: the Nitrogen-fixing Micro-organisms, M.  
 Berthelot, 23; Bacteria, their Nature and Function, Dr. E.  
 Klein, F.R.S., 82; a Manual of Bacteriology, George  
 M. Sternberg, 172, B. Griffiths, 219; Bacilli in the Saliva  
 of Domestic Animals, 181; Antagonistic Effect of Bacillus  
 Florescens liquefaciens on other Organisms, Herr Olitzky,  
 181; the Cholera Bacillus, Herren Bujwid and Linkelburg,  
 207; Method of Detecting Cholera Bacillus in Water, Koch  
 and Ar n., 523; Discovery of the Bacillus Anthracis in Well-  
 mud, M. Dia roptoff, 230; Interaction of Micro-organisms,  
 274; Effect of Ammonia Vapour on Bacilli, Herr Rigler,  
 29; Bacilli in Norwegian Ice, 323; Loeffler's and Laser's  
 Bacilli and Mouse Plagues, 323; Sulphuretted Hydrogen-  
 producing Bacillus of the Black Sea, 323; Loeffler's Bacillus  
 Typhi Murium and Laser's Bacillus der Mäuse-seuche, 323;  
 Bacillus Hydrosulfuricus Ponticus, 323; Micro-organisms  
 producing Sulphuretted Hydrogen, Fromme and Stagnitta-  
 balistreri, 352; Susceptibility of Micro-organisms to Various  
 Strengths of Disinfectants, Signor Trambusti, 352; Resist-  
 ance of some Micro-organisms to High Temperatures, Herr  
 Heim, 377; Greater Efficiency of Disinfectants at High  
 Temperatures and with Moisture, MM. Chamberland and  
 Fernbach, 377; Diagnostik der Bakterien des Wassers,  
 Dr. Alexander Lustig, Mrs. Percy Frankland, 387;  
 Modification of Loeffler's Method for Exhibiting in Stained  
 Preparations the Cilia of Micro-organisms, MM. Nicolle and  
 Morax, 399; Chemical and Bacterial Condition of Elbe at  
 Magdeburg, Herr Ohlmüller, 399; Production of Ammonia  
 in Soil by Microbes, Émile Marchal, 406; Microbian Origin  
 of Puerulent Surgical Infection, 407; Bacteria in their re-  
 lation to Vegetable Tissues, Mr. Russell, 422; the Vitality of  
 Pathogenic Bacteria in Vegetable Tissues, Herr Lominsky,  
 445; Prof. P. Frankland on the Present Position of Bacteri-  
 ology, 530; Production of Sporeless Anthrax Bacilli, M.  
 Phisalix, 545; Manual of Bacteriology for Practitioners and  
 Students, Dr. S. L. Schenk, 562; Bactericidal Action of Per-  
 oxide of Hydrogen, Richardson, Traugott, Van Tromp and  
 Althoefer, 599; Strauss's Method of Colouring Cilia of  
 Living Micro-organisms, 621  
 Baginsky (Dr.), Relation of Glossopharyngeal and Olfactory  
 Nerves to Sensory End-organs, 408  
 Bailey (E. H. S.), Effects of Cyclone of June 21 in Kansas,  
 352  
 Baily (Francis G.), Telephone Lines and their Properties,  
 William J. Hopkins, 99  
 Baker (H. B.), Influence of Moisture on Chemical Action, 118  
 Bakhuyzen (Prof. H. G. Van de Sande), the Apex of the Sun's  
 Way, 401  
 Baldwin (James Mark), Elements of Psychology, 292  
 Balfour (Lewis), New Conclusions, 342  
 Ball (Sir Robert S., F.R.S.), Wanderings of the North Pole,  
 349; the Discussion on Quaternions, 391; Astronomical  
 Photography, 541  
 Ball (Prof. Valentine), Relationship between Physical Geography  
 and Geology, 554  
 Baland (M.), Interior Temperature of Bread coming out of  
 Oven, 632  
 Ballooning: Electrification suggested as Cause of Ignition of  
 Balloon *Humboldt*, Prof. Börnstein, 120; Thermometer  
 Soundings in the High Atmosphere, W. de Fonvielle, 160;  
 Trial of Langlois' Screw for Vertical Propulsion, M. Mallet,  
 360; "Castle in the Air" for forthcoming Antwerp Exhibi-  
 tion, 569  
 Ballou (H. M.), the Chinook Wind, 21  
 Baluchistan, the Earthquake in, 348  
 Baly (E. C. C.), Sodium Potassium High Temperature Thermo-  
 meters, 63  
 Bancroft (I. L.), the Habit and Use of Nardoo (*Marsilea  
 Drummondii*), 407  
 Banks's (Sir Joseph) Correspondence, 205  
 Barker (David Wilson), the Glaciation of Brazil, 614; Scintil-  
 lation of Stars, 614  
 Barker (Geo. F.), Physics, Advanced Course, Prof. Oliver  
 Lodge, F.R.S., 1  
 Barnard (Prof. E. E.), Photographs of the Milky Way, 277  
 Barnave Carlingford, on the Igneous Rocks of, Prof. W. J.  
 Sollas, 532  
 Barrett (Charles G.), the Lepidoptera of the British Islands, 585  
 Barrier Reef of Australia, the Great, its Products and Potenti-  
 alities, W. Saville-Kent, Prof. Alfred C. Haddon, 217  
 Bartoli (Prof.), Corrected Formula of Heat necessary to Raise  
 a Gramme of Water to  $t^{\circ}$  C., 299  
 Barton (E. H.), Electric Interference Phenomena, 527  
 Basic Eruptive Rocks of Gran (Christiana Region), on the  
 Genetic Relations of the, Prof. W. C. Brögger, 531  
 Basset (A. B., F.R.S.), Toroidal Functions, 23; Electro-Optics,  
 34; the Publication of Physical Papers, 222, 292; Prof.  
 Oliver Lodge, F.R.S., 292; Mr. Love's Treatise on Elastici-  
 ty, 415, 543; Organisation of Scientific Literature, 436;  
 the Publication of Scientific Papers, 529  
 Batchelder (S. F.), New Series of Isanomalous Temperature  
 Charts, 239  
 Battersby (J.), Crocodile's Eggs with Solid Shell, 248  
 Battin (Joseph), Death of, 481  
 Baumann's (Dr.), Exploration to North-East of Lake Tangan-  
 yika, 548  
 Beadle (C.), Cellular Thiocarbonates, 94  
 Bean (T. E.), Sex Proportions of Butterfly production, 231  
 Beard (Dr. J.), Obituary Notice of Carl Semper, 271  
 Beaumont (Mr.), Automatic Balance of Reciprocating Me-  
 chanism, 556; a Variable Power Gear for Electrical Loco-  
 motives, 557  
 Beaver Creek Meteorites of May 26, 1893, E. E. Howell, 351;  
 Prof. B. J. Harrington, 426  
 Bebb (Prof. Dr. W. J. Van), Katechismus der Meteorologie,  
 387  
 Beevor (Dr. C. E.), Analysis by Electric Stimulation of Motor  
 Region of Cortex Cerebri in *Macacus sinicus*, 142  
 Belgian Academy, Prize Subjects for 1894, 107  
 Belgique, Bulletin de l'Académie Royale de, 188, 332, 406, 583  
 Bell (Dugald), the Shell-beds of North Scotland, 181; In-  
 vestigation into the Shell-bearing Clays of Clava in Nairn,  
 532  
 Bell (Prof. F. Jeffery), Singular Swarms of Flies, 127  
 Ben Nevis, the Meteorological Observatory on, 428  
 Benda (Dr.), Microscopical Investigations on Development and  
 Function of Mammary Gland, 408  
 Bendigo Gold-fields, the, E. J. Dunn, 207  
 Bengal Duars, Experiences in the, E. Heawood, 555  
 Benham (W. B.), New Species of Nais, 115  
 Benischke (Dr. G.), Alternate Current Utilised for Investigating  
 Dielectric Constants of Solids, 378  
 Bennett (Alfred W.), Popular Botany, 104  
 Benson (C.), Normal Distribution of Rainfall in Madras  
 Presidency, 230  
 Berget (Alphonse), New Determination of Mass and Density of  
 Earth, 251  
 Bergholz (Dr. P.), Bremen Meteorological Observations for  
 1892, 422  
 Berlin Geographical Society, 40  
 Berlin Meteorological Society, 120  
 Berlin Physical Society, 48, 144, 288, 407  
 Berlin Physiological Society, 47, 119, 288, 408  
 Berliner Wetter-Buch, das älteste, Prof. Hellmann, 11  
 Bernard (H. M.), Trilobites with Antennæ at Last! 582  
 Berthelot's Principle Applied to Magmatic Concentration, A.  
 Harker, 532  
 Bertillon (A.), System of Anthropometrical Measurements, 250  
 Bertillonage, E. R. Spearman, 249  
 Berzelius and Liebig, Correspondence of, 561  
 Bessey (Prof. C. E.), Evolution and Classification, 534  
 Bevan (E. J.) Cellulose Thiocarbonates, 94  
 Bezold (Prof. von), Meteorology as Physics of Atmosphere,  
 140, 239  
 Bible, Helps to the Study of the, Henry Froude, 539  
 Bickerton (Prof. A. W.), Origin of New Stars, 379  
 Bidgood (John), Popular Botany, 175  
 Bifurcation of the Sciences, Thoughts on the, suggested by the  
 Nottingham Meeting of the British Association, Prof.  
 Oliver J. Lodge, F.R.S., 564  
 Bigourdan (M.), the Eclipse of April, 1893, 111  
 Binswanger (Mr.), Electric Heating Appliances for Domestic  
 Use, 546



- Biology: Aids to Biology, Joseph W. Williams, 26; Medical Biology, 29; Biological Institute at Heligoland, 59; the Conjoint Board's Medical Biology, Walter E. Collinge, 75; Turbellariae of the Black Sea, Dr. Sophie Pereyaslawzewa, 109; Biological Station started on Heligoland, 231; Biological Station established at Gall Lake, Minnesota, 324; the Minute Structure of Plant Hybrids, Prof. J. Muirhead Macfarlane, 402; Projected Biological Survey of Indiana, 421; Origin and Meaning of the Term Biology, J. S. Burdon Sanderson, F.R.S., 464; Opening Address in Section D of the British Association, by Rev. H. B. Tristram, F.R.S., 490; Biology at the British Association, 574; Marine Biology, Dredging Expedition of the Liverpool Committee, 14; the Week's Work of the Plymouth Station, 14, 39, 61, 81, 111, 134, 158, 183, 208, 232, 253, 275, 300, 326, 354, 379, 401, 425, 447, 483, 524, 547, 573, 600, 622; Plankton of Northern Lagoon of Jan Mayen, G. Pouchet, 119; Whitsuntide Work of Liverpool Committee, Prof. Herdman, 133; Submarine Boreers and Submarine Cables, W. H. Preece, F.R.S., 160; Animal Phosphorescence, D. Zabolotny, 92; Marine Biological Association, 236; European Laboratories of Marine Biology, 404; the Port Erin Station, 423
- Birds' Method of Steering, F. W. Headley, 293; F. A. Lucas, 414
- Birds, Sexual Colouration of, T. C. Headley, 413
- Birds in a Village, W. H. Hudson, 409
- Birds, Weight of, in Relation to their Bulk, 501
- Birkeland (M.), Reflection of Electrical Waves at Extremity of Linear Conductor, 14
- Biscay, Bay of, Currents of, A. Hauteux, 601
- Bishop's Ring, T. W. Backhouse, 509
- Black Sea, Turbellariae of the, Dr. Sophie Pereyaslawzewa, 109; Sulphuretted Hydrogen-producing Bacillus of the, 323
- Blake (Prof. J. F.), Felsites and Conglomerates between Bethesda and Llanllyfni, 118
- Blake and Franklin (Messrs.), Is Colour-Blindness a Product of Civilisation? 206
- Blakesley (Mr.), Dr. Lodge's Foundation of Dynamics, 166; Photometry, 190
- Blanford (W. T., F.R.S.), Catalogue of the Snakes in the British Museum, George Albert Boulenger, 313
- Blanyulus guttulatus*, a New Enemy of the Vine, M. Fontaine, 632
- Blechynden (A.), Transmission of Heat through Boiler-plates, 278
- Bleeding Bread, M. C. Cooke, 578
- Blind, the Sense of Touch in the, Dr. Goldscheider, 48
- Blomefield (Rev. Leonard), Death of, 445, 483
- Blyth (A. Wnter), Lectures on Sanitary Law, 246
- Bodenstein (Herr), the Action of Heat on Hydriodic Acid Gas, 111
- Bodily Powers of Man and other Animals, Jeremiah Head, 498
- Boehmer (G. H.), Prehistoric Naval Architecture of Northern Europe, 274
- Bohr (Dr. Christian) on the Effect of the Stimulation of the Vagus on Disengagement of Gases in the Swim-bladder of Fishes, 575
- Bois (H. E. G. du), Polarisation of Undiffracted Infra-red Radiation by Metal Wire Gratings, 406
- Bolid, Photograph of a, 16
- Bolton (H. C.), a Select Bibliography of Chemistry, 446
- Boltzmann (Dr. Ludwig), Vorlesung über Maxwell's Theorie der Electricität und des Lichtes, 435
- Bombay, Science in, 13
- Bonney (Prof. T. G., F.R.S.), Louis Agassiz: his Life and Work, Charles Frederick Holder, 52; Relationship between Physical Geography and Geology, 554; Coral Reefs, 576
- Boothby, Guy, Journey across Australia, 40
- Borel (Charles), Question of true Hysteresis in case of Dielectrics, 110; Dielectric Constants of Biaxial Crystals, 240
- Borneo, the Baram District of, Charles Hose, 118
- Borneo, North, Exploration of Mount Kina Balu, John Whitehead, 564
- Börnstein (Prof.), Electrification suggested as Cause of Ignition of Balloon *Humboldt*, 120
- Boron, on the Quantitative Determination of, M. Henri Moissan, 96
- Boscher (E.), Imitation or Instinct by a Male Thrush, 369
- Botany: Italian Stations for Economic Investigations of Plant Diseases, 13; Colours of Canadian Flowers with relation to Time of Flowering, A. T. Drummond, 37; Difficulty of Determining Plants by Local Names, R. B. Smyth, 37; Beiträge zur Biologie und Anatomie der Lianen, im Besonderen der in Brasilien einheimischen Arten, Dr. H. Schenck, 53; Some Protococcoidae (Algæ), Al. Artari, 92; a New (Bay) Gall-Insect, Dr. C. Massa Congo, 92; Growth of Leaf-Stalk of Nymphaeaceae, Prof. G. Arcangeli, 92; a Fall of Rain from Lime-trees, Prof. F. Pasquale, 92; Bolletino della Società Botanica Italiana, 92, 333; Chemistry and Physiology of Foliage Leaves, H. T. Brown and G. H. Morris, 94; Popular Botany, Alfred W. Bennett, 104; John Bidgood, 175; the Transpiration of Tropical Plants, Herr Haberlandt, 108; the Protective Function of Oxalic Acid in Plants, Herr Giessler, 109; Nuovo Giornale Botanico Italiano, 115, 333; Flora of Pollard Willows near Cambridge, J. C. Willis and J. H. Burkill, 143; Plants distributed by Cambridge Dust Carts, J. H. Burkill, 143; the New Flora and the Old in Australia, A. G. Hamilton, 161; Multiplicity of Homologous Parts in Relation to Gradation of Species, A. Chatin, 167; Hygroscopic Plants, G. Falkenhorst, 253; Tobacco Culture in Trinidad, 275; Botanical Gazette, 284, 333, 359, 559; Oligodynamic Phenomena of Living Cells, Prof. Carl v. Nägeli, 331; Journal of Botany, 333, 559; Studies in Morphology of Spore-producing Members, I. Equisetineae and Lycopodineae, F. O. Bower, F.R.S., 334; Failure of Efforts to introduce Cultivation of Japanese Paper Mulberry into India, 353; Cattle Poisoning Species of *Hemeria* (Cape Tulip) in Victoria, Dr. McAlpine, 378; Influence of Solar Radiation upon Plants, G. Landel, 384; the Habit and Use of Nardoo (*Marsilea Drummondii*), T. L. Bancroft, 407; Tubulane, a Caucasian Truffle, A. Chatin, 407; Grasses of the Pacific Slope, including Alaska and the adjacent Islands, Dr. Geo. Vasey, 411; the Anatomy of Magnoliaceae, Sadahisa Malsada, 482; Additions to Kew Herbarium, 510; Gesammelte Abhandlungen über Pflanzen-physiologie, Prof. Sachs, 513; Pollination of Yucca, Prof. C. V. Riley, 523; Botanical Exploration of St. Vincent, H. H. Smith and G. W. Smith, 544; Subtropical Botanical Laboratory established at Eustis, Florida, 545; Madison Botanical Congress, 597; Localisation of the Active Principle in Capparidæ, M. Léon Guignard, 608; Lehrbuch der Botanik nach dem gegenwärtigen Stand der Wissenschaft, 612; Insects and Flowers: Labiate, Chas. Robertson, 619
- Bothamley (C. H.), the Composition of Mineral Waters, 22
- Boulder Clay, Intrusive Masses of, Percy F. Kendall, 370
- Boulders, Ice, as an Excavator of Lakes and a Transporter of, Sir Henry H. Howorth, F.R.S., 247
- Boulenger (George Albert), Catalogue of the Snakes in the British Museum, W. T. Blanford, F.R.S., 313
- Boudouloua Grotto, the, E. A. Martel and Emile Rivière, 231
- Bourdon (M.), Curious Optical Illusion, 180
- Bourquelot (Em.), Emulsine-like Ferment in Mushrooms, 512
- Bourne (Gilbert), Coral Reefs, 576
- Boussinesq (J.), Simplification of Formulæ Depending on Resisting Power of Solids by introducing Greatest Linear Extension  $\Delta$  supportable by Material in Place of Corresponding Elastic Force, 216
- Boutan (Louis), Submarine Photographs, 377
- Boutille (M.), New Electric Fire-Alarm, 423
- Bouty (M. E.), the Capacity of Polarisation, 180; Researches of Polarisation, 336
- Boulder Beds, the Bacchus Marsh, R. D. Oldham, 416
- Bower (F. O., F.R.S.), Studies in Morphology of Spore-producing Members: I. Equisetineae and Lycopodineae, 334
- Bowman (Sir William, F.R.S.), the Collected Papers of J. Burdon Sanderson, F.R.S., and J. W. Hulke, F.R.S., 26
- Boyer (G.), Two New Diseases of the Mulberry, 432
- Boys (C. V., F.R.S.), Drawing of Curves by their Curvature, 116
- Bozward (J. Lloyd), Wasps, 459; a Remarkable Meteor, 567; the Summer of 1893, 614
- Brabourne's (Lord) Library; Sir Joseph Banks's Correspondence, 205
- Brain of Women, the, Prof. L. Büchner, 350
- Bramcote and Stapleford Hills, Composition of the Rock of, Prof. Clowes, 532
- Brandon, the Flint Industry at, Edward Lovett, 180
- Braun (Dr. C.), a Simple Rule for finding the Day of the Week corresponding to any given Day of the Month and Year, 222
- Brazil Coffee Culture, 423
- Brazil, the Supposed Glaciation of, Dr. Alfred R. Wallace,

- F.R.S., 589; Sir Henry H. Howorth, F.R.S., 614; David Wilson Barker, 614
- Bread, Bleeding, M. C. Cooke, 578
- Bread coming out of Oven, Interior Temperature of, M. Bolland, 632
- Breath Figure, John Aitken, 71
- Brehm (A. E.), *Les Merveilles de la Nature, La Terre, les Mers, et les Continents; Géographie Physique, Géologie et Minéralogie*, Fernand Priem, Prof. A. H. Green, F.R.S., 25
- Bremen Meteorological Observations for 1892, Dr. P. Bergholz, 422
- Brew (William), a Peculiar Discharge of Lightning, 370
- Bridge Construction, a Practical Treatise on, T. Claxton Fidler, 612
- Brightness of the Major and Minor Planets, the, Dr. G. Müller, 15
- Brillouin (Marcel), Proper Vibrations of Medium indefinitely extended outside a Solid Body, 287
- Brinton (Dr. Daniel G.), on the Earliest Men, 460; on the Mexican Calendar System, 462
- British Agriculture, the Future of, Prof. Sheldon, 174
- BRITISH ASSOCIATION: Meeting at Nottingham, 485; Prof. Frank Clowes, 295, 344, 419, 443, 463, 520; Arrangements for Work of Chemical Section of the, Prof. J. Emerson Reynolds, F.R.S., 416; Inaugural Address by J. S. Burdon Sanderson, LL.D., D.C.L., F.R.S., 464
- Section A (Mathematics and Physics)*—Opening Address by R. T. Glazebrook, F.R.S., President of the Section, 473; Report of the Committee on Solar Radiation, 525; Prof. G. F. Fitzgerald on the Period of Vibration of Disturbances of Electrification of the Earth, 526; the Moon's Atmosphere and the Kinetic Theory of Gases, G. H. Bryan, 526; Grinding and Polishing of Glass Surfaces, Lord Rayleigh, F.R.S., 526; Apparatus for Observing and Photographing Interference and Diffraction Phenomena, W. B. Croft, 526; on Sun-spots and Solar Envelopes, Rev. F. Howlett, 526; on Our Present Knowledge of Electrolysis and Electro-Chemistry, T. C. Fitzpatrick, 527; on the Connection between the Ether and Matter, Prof. O. Lodge, 527; a Mechanical Analogue of Anomalous Dispersion, 527; Note on Prof. Ebert's Method of Estimating the Radiating Power of an Atom, 527; on Electric Interference Phenomena, E. H. Barton, 527; on the Passage of Electric Waves through Layers of Electrolyte, 527; W. B. Croft on the Plan of Science Teaching at Winchester School, 527; on Standards of Low Electrical Resistance, J. Viriamu Jones, 528; Apparatus for Comparing Nearly Equal Resistances, F. H. Nalder, Dr. O. Lodge, F.R.S., 528; a Simple Interference Experiment, Lord Rayleigh, F.R.S., 528; on Specula for Reflecting Telescopes, Dr. A. Shafarik, 528; the Publication of Scientific Papers, A. B. Basset, 529; a New Form of Air Pump, Prof. J. J. Thompson, 529; on a Peculiar Motion assumed by Oil Bubbles in Ascending Tubes containing Caustic Solutions, F. T. Trouton, 529
- Section B (Chemistry)*—Opening Address by Prof. Emerson Reynolds, F.R.S., President of the Section, 477; G. J. Fowler on the Preparation and Properties of Nitride of Iron, 529; T. W. Hogg on Cyanonitride of Titanium, 529; Report of the Committee for Investigating the Action of Light upon Dyed Colours, 529; the Method of Isolation and the Properties of Fluorine, M. Moissan and Meslans, 529; the Iodine Value of Sunlight in the High Alps, Dr. S. Rideal, 529; Report of the Committee on the Action of Light on the Hydracids of the Halogens in the Presence of Oxygen, 530; the Expansion of Chlorine and Bromine under the Influence of Light, Dr. Richardson, 530; Prof. P. Frankland on the Present Position of Bacteriology, more especially in its Relation to Chemical Science, 530; on Explosions in Mines, with Special Reference to the Dust Theory, Prof. H. B. Dixon, Mr. Hall, Mr. Galloway, Prof. Thorpe, Mr. Stokes, 530
- Section C (Geology)*—Opening Address by J. J. H. Teall, F.R.S., President of the Section, 486; on the Genetic Relations of the Basic Eruptive Rocks of Gran (Christiana Region), Prof. W. C. Brögger, 531; on the Dissected Volcano of Crandall Basin, Wyoming, Prof. J. P. Iddings, 531; on Structures in Eruptive Bosses which resemble those of Ancient Gneisses, Sir Archibald Geikie, For. Sec. R.S., 531; on Berthelot's Principle applied to Magmatic Concentration, A. Harker, 532; on the Igneous Rocks of Barnavave, Carlingford, Prof. W. J. Sollas, 532; on Augen-Structure in Relation to the Origin of Eruptive Rocks and Gneiss, J. G. Goodchild, 532; on the Derbyshire Toadstone, Mr. Arnold-Bemrose, 532; on the Igneous Rocks of South Pembrokeshire, Messrs. Howard and Small, 532; Composition of the Rock of Bramcote and Stapleford Hills, Prof. Clowes, 532; Source of Nottingham Water Supply, Prof. E. Hull, 532; Investigation into the Shell-bearing Clays of Clava in Nairn, Dagald Bell, 532; General Glaciation of Asia, Prince Kropotkin, 533; the Esker Systems of Ireland, Prof. Sollas, 533; Origin of the Glacial Period, C. A. Lindvall, 533; Glaciers, Prof. Bonney, 533; on the Geology of Central East Africa, Walcot Gibson, 533; Geology in Secondary Education, 533
- Section D (Biology)*—Opening Address by Rev. H. B. Tristram, F.R.S., President of the Section, 490; Zoology of the Sandwich Islands, David Sharp, 574; on the Physico-Chemical and Vitalistic Theories of Life, Dr. J. S. Haldane, Mr. Langley, Prof. Cleland, Prof. Burdon Sanderson, 574; on the Digestive Ferments of a Large Protozoon, Prof. Marcus Hartog and Augustus E. Dixon, 575; on the Effect of the Stimulation of the Vagus on Disengagement of Gases in the Swim-bladder of Fishes, Dr. Christian Bohr, 575; on Nerve Stimulation, Prof. F. Gotch, 575; Physiological Action of the Inhalation of Oxygen in Asphyxia, 575; Dredging Expeditions in the Irish Sea lying around the Isle of Man, 575; on the Origin of Organic Colour, F. T. Mott, 575; on the Roots of *Lemna* and the Reversing of the Fronds in *Lemna minor*, Miss Nina F. Layard, 575; on the Aetiology and Life History of some Vegetal Galls and their Inhabitants, C. B. Rothera, 575; Lime Salts in Relation to some Physiological Processes in the Plant, Dr. J. Clark, 575; Coral Reefs, Prof. W. J. Sollas, F.R.S., Dr. Hickson, 575; Dr. Rothpletz, Gilbert Bourne, Prof. Bonney, Sir H. Howorth, Mr. Stebbing, H. O. Forbes, 576; the Lateral Canal System of Fishes, W. E. Collinge, 576; on the Ovipositor of the Cockroach, Prof. Denny, 576; on Certain Gregarinidæ and the Possible Connection of Allied Forms with Tissue Changes in Man, Dr. C. H. Cattle and Dr. J. Millar, 576; the Starch of the Chlorophyll Granule and the Chemical Processes involved in its Dissolution and Translocation, Horace T. Brown, F.R.S., 576; on Nuclear Structures in the Hymenomycetes, H. Wazer, 576
- Section E (Geography)*—Opening Address by Mr. Seebohm, President of the Section, 554; on the Relationship between Physical Geography and Geology, Clements R. Markham, F.R.S., W. Topley, F.R.S., E. G. Ravenstein, Prof. C. Lapworth, F.R.S., Prof. Valentine Ball, Dr. R. D. Roberts, Dr. H. R. Mill, H. Yule Oldham, Prof. Bonney, F.R.S., Sir Archibald Geikie, 554; Cruise of the Dundee Whalers, *Balaena and Active*, toward the Antarctic Regions, W. S. Bruce and C. M. Donald, 555; Experiences in the Bengal Duars; the Settlement of Santal Colonists in that Region, E. Heawood, 555
- Section G (Mechanical Science)*—Opening Address by Jeremiah Heald, President of the Section, 497; Automatic Balance of Reciprocating Mechanism, Mr. Beaumont, 556; Warming and Ventilating, Frank Ashwell, 556; Watch-making by Machinery, T. P. Hewitt, 556; Pneumatic Caulking and Chipping Tool, Mr. Ross, 556; Relative Cost of Conductors with Different Systems of Electrical Power Transmission, 556; on Water Power as a Source of Electricity, A. B. Snell, 557; a Variable Power Gear for Electrical Locomotives, Mr. Beaumont, 557; Flashing Lights for Marine Purposes, O. T. Olson, 557; an Automatic Gem Separator, William S. Lockhart, 557; the Wickstead Testing Machine, Prof. Robinson, 557
- Section H (Anthropology)*—Opening Address by Dr. Robert Munro, President of the Section, 503; Ethnographic Aspect of Dancing, Mrs. Lilly Grove, 557; on Anglo-Saxon Remains and Coeval Relics from Scandinavia, Prof. Hans Hildebrand, 557; Origin and Development of Early Christian Art, J. Romilly Allen, 558; Ethnographical Notes on the Congo Tribes, Herbert Ward, 558; Dr. Crochley Clapham, the Mad Head, 558; Dr. Munro on the Structure of Lake Dwellings, 558; Arthur Bulleid on a British Village of Marsh Dwellings, 558; Thoughts on the Bifurcation of the Sciences suggested by the Nottingham Meeting of the British Association, Prof. Oliver J. Lodge,

- F.R.S., 564; B.A. Sectional Procedure, 566; British Association Report on Thermodynamics, G. H. Bryan, 616  
 British Butterflies, Charles G. Barrett, W. F. Kirby, 585  
 British Empire, 1892, Climatological Table for, 607  
 British Medical Association, 322  
 British Museum, Catalogue of the Snakes in the, George Albert Boulenger, W. T. Blanford, F.R.S., 313  
 British Village of Marsh Dwellings, on a, Arthur Balleid, 558  
 Brodmann's (Herr) Method of Determining Co-efficients and Friction of very Viscous Liquids, 132  
 Brögger (Prof. W. C.), on the Genetic Relations of the Basic Eruptive Rocks of Gran (Christiana Region), 531  
 Bromine, the Expansion of Chlorine and, under the Influence of Light, Dr. Richardson, 530  
 Brook (George), Death of, 376; Obituary Notice of, 420  
 Brown (H. T.), Chemistry and Physiology of Foliage Laws, 94  
 Brown (H. race T., F.R.S.), Starch of the Chlorophyll Granule and the Chemical Processes involved in its Dissolution and Translocation, 576  
 Brown-Séquard (M.), Physiological and Therapeutic Effects of Injection of Orchitic Liquid, 23  
 Browning (P. E.), Separation of Copper from Cadmium by Iodide Method, 631  
 Bruce (W. S.), Antarctic Exploration, Cruise of the Dundee Whalers, 555  
 Brühl (Prof.), Atomic Refraction of Nitrogen, 60  
 Brunck (Dr.), Ozone Production at High Temperatures, 354  
 Bryan (G. H.), the Bulkhead Question, 279; the Moon's Atmosphere and the Kinetic Theory of Gases, 526; British Association Report on Thermodynamics, 616  
 Bryden (H. Anderson), Gun and Camera in Southern Africa, 125  
 Buchan (Dr. A.), London Mean Temperatures 1763-1892, 155  
 Buchanan (J. Y., F.R.S.), Density and Alkalinity of Waters of Atlantic and Mediterranean, 168; the Publication of Scientific Papers, 340  
 Büchner (Prof. L.), the Brain of Women, 350  
 Buckley (T. E.), a Vertebrate Fauna of Argyll and the Inner Hebrides, 123  
 Buckman (S. S.), the Bajocian of Sherborne District, 191  
 Builders, on the Early Temple and Pyramid, J. Norman Lockyer, F.R.S., 55  
 Bajwid (Herr), Choleroïd Bacilli, 207  
 Balleid (Arthur), on a British Village of Marsh Dwellings, 558  
 Bulletin de l'Académie Royale de Belgique, 188, 332, 406, 583  
 Bulletin Astronomique for April, 62  
 Bulletin of New York Mathematical Society, 70, 187, 259, 359  
 Bulletino della Società Botanica Italiana, 92, 333  
 Bulletin de la Société des Naturalistes de Moscou, 91, 188, 583  
 Burch (Geo. J.), a Manual of Electrical Science, 588  
 Burdon Sanderson (J. S., F.R.S.), Inaugural Address at the Nottingham Meeting of the British Association, 464; Origin and Meaning of the Term "Biology," 464; Origin and Scope of Modern Physiology, 465; the Specific Energies of the Organism, 467; Experimental Psychology, 469; Phototaxis and Chemotaxis, 470  
 Burial Mounds of Japan, the Ancient, Romyn Hitchcock, 398  
 Burkill (J. H.), Flora of Pollard Willows near Cambridge, 143; Plants distributed by Cambridge Dust Carts, 143  
 Burma, the Amber and Jade Mines of Upper, Dr. Noetling, 13  
 Burmite, a New Variety of Amber, Dr. Noetling, 13  
 Burls (F. B.), Note on a Meta-azo-compound, 118; Azo-compounds of Ortho-Series, 262  
 Burnside (Prof. W., F.R.S.), a Problem of Conformal Representation, 23; Theory of Functions of a Complex Variable, 169  
 Burton (Dr. C. V.), Dr. Lodge's Foundation of Dynamics, 166  
 Bütschli's (Prof. O.) Artificial Amoebæ, Dr. John Berry Haycraft, 594  
 Butterfly Production, Sex Proportions of, T. E. Bean, 231  
 Butterflies: Brief Guide to the Common Butterflies of the United States and Canada, the Life of a Butterfly, Samuel Hubbard Scudder, W. F. Kirby, 338  
 Butterflies, British, Charles G. Barrett, W. F. Kirby, 585  
 Cable, Submarine, laid between Queensland and New Caledonia, 623  
 Cables, Submarine, and Submarine Borers, W. H. Preece, F.R.S., 160  
 Cadell (H. M.), the Site of Edinburgh in Prehistoric Times, 136  
 Caillelet (L.), Experiments on Resistance of Air, &c., to the Motion of Falling Bodies, 311  
 Calbuco, Chili, Volcanic Eruption near, 618  
 Calculus, Differential, for Beginners, Joseph Edwards, 539  
 Callaway (Dr. Charles), Origin of the Crystalline Schists of the Malvern Hills, 46  
 Calorimetry, Animal Heat and Physiological, Prof. Rosenthal, 88  
 Calorimetry: Corrected Formula of Heat necessary to raise a gramme of water to  $t^{\circ}$  C., Profs. Bartoli and Stacciat, 299  
 Cambridge: Mr. H. Y. Oldham appointed to Cambridge Geographical Lectureship, 136; Flora of Pollard Willows near Cambridge, J. C. Willis and J. H. Burkill, 143; Plants distributed by Dust Carts, J. H. Burkill, 143; Cambridge Philosophical Society, 143; the Rede Lecture, Prof. Michael Foster, Sec. R.S., 178; Tercentenary of the Admission of William Harvey to Gonville and Caius College, Cambridge, 199; Proposed New Telescope for Cambridge Observatory, 358  
 Cambridgeshire, Shower of Ants and Flies in, 351  
 Camera, Gun and, in Southern Africa, H. Anderson Bryden, 125  
 Campbell (Prof.), the Spectrum of the Rordame-Guénisset Comet, 379; Nova (T) Aurigæ Spectrum, 524  
 Candolle (Alphonse de), Obituary Notice of, W. T. Thistelton-Dyer, F.R.S., 269  
 Cap of Mars, South Polar, Prof. George Comstock, 15  
 Capstick (J. W.), Ratio of Specific Heats of Paraffins and Monohalogen Derivatives, 260  
 Caraccas, Capture of Electric Eels by means of Wild Horses in, Humboldt's Story contravened, 324  
 Carbon, the Specific Heat of, H. Le Chatelier, 72  
 Carhart (H. S.), a One-Volt Standard Cell, 309  
 Carr (F. H.), the Aconite Alkaloids, vi.; Conversion of Aconitine into Isaconitine, 535  
 Carrier Pigeons, F. W. Headley, 223  
 Carus-Wilson (C.), Scotographoscope, 64; Vivisection, 317  
 Cassini, proposed Statue to, 273  
 Cast-iron, New Enamel for Protecting, Fletcher, Russell and Co., 571  
 "Castle in the Air" for forthcoming Antwerp Exhibition, 569  
 Catalogue, Official, of the Exhibition of the German Empire at the Columbian Universal Exhibition in Chicago, 176  
 Cataract Construction Company at Niagara Falls, Works of, 444  
 Cats, Manx, A. de Mortillet, 108  
 Catskill, on the use of the term, Prof. J. J. Stevenson, 462  
 Cattle (Dr. C. H.), on certain Gregarinidæ, and the possible connection of Allied Forms with Tissue Changes in Man, 576  
 Cattle Food, Vine-leaves as, A. Murtz, 168  
 Cattle Losses in Madras, Statistics for 1891-2 of, 424  
 Canfieldite, Prof. Penfield, 378  
 Cecil (Henry), Singular Swarms of Flies, 127  
 Ceilings, Soot-figures on, Dr. A. Irving, 29; Dr. Hugh Robert Mill, 29; Lieut. Col. Allan Cunningham, 29; E. B. Poulton, F.R.S., 29; J. Edmund Clark, 77  
 Celestial Photography at the Paris Observatory, 617  
 Cells, Living, Oligodynamic Phenomena of, Prof. Carl V. Nageli, 331  
 Centenary of Gilbert White, 212  
 Century Magazine, Science in the, 250, 350  
 Cerfontaine (Dr. Pane), Trichinosis, 332  
 Cesaro (G.), Simple Method of Measuring Retardation in Minerals cut in Thin Plates, 583  
 Ceylon, the Big and Little Monsoons of, E. Douglas Archibald, 175  
 Chamberland (M.), Greater Efficiency of Disinfectants at High Temperatures and with Moisture, 377  
 Chandler (Prof.), the Constant of Aberration, 112  
 Chantre (E.), Microbian Origin of Purulent Surgical Infection, 407  
 Chaos, Order or, 241  
 Chapeaux (Marcelon), Nutrition of Echinoderms, 583  
 Chappe (Claude), Statue to, 297  
 Chappuis (M.), the Spirit Thermometer, 12; Investigation of Thermal Expansion of Water by Weight-Thermometer Method, 423  
 Character, Prenatal Influences on, Dr. Alfred R. Wallace, F.R.S., 389



- Characters, Acquired, Non-Inheritance of, Dr. Alfred R. Wallace, F.R.S., 267
- Charchani, Peru, Meteorological Station at, the Highest in the World, A. L. R.itch, 631
- Charpentier's Experiments Demonstrative of an Oscillatory Process in the Organ of Vision and of its Dimensions, 380
- Chassagny (M.), Influence of Longitudinal Magnetisation on Electromotive Force, 38
- Chatin (A.), Multiplicity of Homologous Parts in Relation to Gradation of Vegetable Species, 167; Tubulane, a Caucasian Truffle, 407
- Chatham Islands: Mr. H. O. Forbes's Discoveries in the, 174; Henry O. Forbes, 74, 126; a Correction, 370; Dr. Alfred R. Wallace, 27; Prof. Alfred Newton, F.R.S., 101, 150
- Chemistry: the Thionylamines, Prof. Michaelis, 14; Chemical Society, 22, 94, 117, 190, 262, 525; Limits of Accuracy of Gold Bullion Assaying, T. K. Rose, 22; the Volatilisation of Gold, T. K. Rose, 22; Boiling and Melting Points of Nitrous Oxide, W. Ramsay, F.R.S., and J. Shields, 22; Isomerism of Paraffinic Aldoximes, W. R. Dunstan and T. S. Dymond, 22; the Composition of Mineral Waters, C. H. Bothamley, 22; a Magnesium Compound of Diphenyl, W. R. Hodgkinson, 22; Dissolution of Gold in Potassium Cyanide Solution, R. C. MacLaurin, 22; Research Laboratories attached to Elberfeld Farbenfabriken, 29; a Method of Preparing Nitriles in a State of Purity, Prof. Michaelis and Dr. Siebert, 39; Lehrbuch der Allgemeinen Chemie, Dr. Wilhelm Ostwald, J. W. Roger, 49; Deportment of Charcoal with the Halogens, Nitrogen, Sulphur and Oxygen, W. G. Mixer, 70; Influence of Free Nitric Acid and Aqua Regia on Precipitation of Barium as Sulphate, P. E. Browning, 70; Series of well-crystallising Double Halogen Salts of Tellurium with Potassium, Rubidium and Cesium prepared by H. L. Wheeler; Corresponding Selenium Compounds, Dr. Muthmann and Schäfer, 80; Analogy between Solutions of a Gas and of a Salt in indifferent Solutions of Salts, I. M. Syctabenoiff, 91; Chemistry of Foliage Laws, H. T. Brown and G. H. Morris, 94; Cellulose Thiocarbonates, C. F. Cross, E. J. Bevan, and C. Beadle, 94; Sulphocamphylic Acid, W. H. Perkin, jun. 94; Formation of Pyridine Derivatives from Unsaturated Acid, S. Ruhemann, 94; Chlorinated Phenylhydrazines, Part II., J. T. Hewitt, 94; Oxidation of Tartaric Acid in the presence of Iron, H. J. H. Fenton, 94; Products of Interactions of Tin and Nitric Acid, C. H. H. Walker, 94; Interactions of Thiourea and Haloid Derivatives of Fatty Acids, A. E. Dixon, 94; the Quantitative Determination of Boron, Henri Moissan, 96; Hydrocyanic Acid in Plants, Mr. van Romburgh, 96; the Action of Heat and Light on Hydriodic Acid Gas, Prof. Victor Meyer and Herr Bodenstein, 111; Hydrates of Sodium, Potassium and Lithium Hydroxides, S. U. Pickering, 117; Detection of Arsenic in Alkaline Solution, J. Clark, 117; Improvements in Reinsch's Process, J. Clark, 117; Action of Light on Prevention of Putrefaction and Formation of Hydrogen Peroxide, A. Richardson, 117; Capillary Separation of Substances in Solution, L. Reed, 118; Notes on a Meta-azo-compound, R. Meldola and F. B. Burls, 118; Influence of Moisture on Chemical Action, H. B. Baker, 118; New Haloid Derivatives of Camphor, F. S. Kipping and W. J. Pope, 118; Chloroborate of Iron, G. Rousseau and H. Allaire, 119; Heat Developed in Combination of Bromine with Unsaturated Hydrocarbons, W. Louguine and Irv. Kablukov, 119; Preparation of Metallic Tungsten, Molybdenum and Vanadium, M. Moissan, 144; Preparation of Thorium and Zirconium, L. Troost, 144; Dictionary of Applied Chemistry, Prof. T. E. Thorpe, F.R.S., Sir H. E. Roscoe, F.R.S., 145; Chemical Change, V. H. Velez, 149; the Conditions Determinative of Chemical Change, Prof. Henry E. Armstrong, F.R.S., 237; Some Comments on Prof. Armstrong's Remarks on, Prof. W. Ramsay, F.R.S., James Walker, 267; Decomposition of Steam by Heated Magnesium, Herr Rosenfeld, 157; Aluminium Chloride Compounds with Benzoyl Chloride and others of the Aromatic Series, MM. Perrier, Louise, Friedel, and Crafts, 157; Absorption of Seleniuretted Hydrogen by Liquid Selenium at High Temperatures, H. Pelabon, 168; Das Genetische System der Chemischen Elemente, W. Preyer, 173; Azoimide, Prof. Curtis, 183; the Treatment of Barium Sulphate in Analysis, J. G. Phinney, 187; Nature of Certain Solutions, M. C. Lea, 187; Properties of some Strong Solutions, S. U. Pickering, 535; the Formation of Ozone (ii.), W. A. Shenstone and M. Priest, 190; Ozone-Production at High Temperatures, Dr. Bruck, 354; Boiling-Points of Homologous Compounds, I. Ethers, J. Walker, 191; Critical Constants of Fatty and Aromatic Hydrocarbons, Herr Altschul, 206; Die Thermodynamik in der Chemie, J. J. van Laar, 220; Traité Pratique d'Analyse Chimique et de Recherches Toxicologiques, G. Guérin, 221; Tetrachloride of Lead, Prof. Classen and Herr Zaborsky, 232; Prof. Friedrich, 232; Chromopyrosulphuric Acid, A. Recoura, 253, 264; Azo-Compounds of Ortho-Series, R. Meldola, E. M. Hawkins and F. B. Burls, 262; Researches on the Terpenes, III., Action of Phosphorus Pentachloride on Camphene, J. E. Marsh and J. A. Gardner, 262; Note on Combination of Dry Gases, W. Ramsay, 262; Ortho-, Para- and Peri-disulphonic Derivatives of Naphthalene, H. E. Armstrong and W. P. Wynne, 262; Supplementary Notes on Madder Colouring Matters, E. Schunck and L. Marchlewski, 263; Metallic Salts of Sulphophosphoric Acid, Dr. Glatzel, 275; Artificial Synthesis of Iron Pyrites, Dr. Glatzel, 275; Society of Chemical Industry, Sir John Evans, Treas. R.S., 279; Dissociation of Calcium Plumbate, H. le Chatelier, 287; Isolation of Crystallised Sodium Salt of Perchromic Acid, Dr. Häussermann, 300; Considerations on Tautomeric Form of Glucose, Mr. Franchimont, 312; Action of Liquefied Ammonia on Anhydrous Chlorides of Chromium and Iron, Prof. Christensen, 325, 326; Density of Sulphurous Anhydride, A. Leduc, 336; Improved Mode of Preparing Ammonium Salt of Persulphuric Acid, Dr. Elbs, 400; Production of Ammonia in Soil by Microbes, Emile Marchal, 406; a Product of Incomplete Oxidation of Aluminium, M. Pionchon, 407; Arrangements for Work of Chemical Section of the British Association, Prof. J. Emerson Reynolds, F.R.S., 416; the Organo-metallic Compounds of Magnesium, Dr. Fleck, 424; Reduction of Nitrous Acid by Ferrous Salts, Charlotte F. Roberts, 431; Bolton's Select Bibliography, 445; Manufacture of Oxygen from Air by means of Calcium Plumbate, G. Kassner, 446; Prof. Morley's Final Determination of the Atomic Weight of Oxygen, 461; Opening Address in Section B of the British Association, by Prof. Emerson Reynolds, F.R.S., 477; the Compounds of Phosphorus and Sulphur, Herr Helff, 482; Hydrazine and its Compounds, Franz Schäfer, 483; Products of Sublimation of Arsenic, Dr. Retgers, 510; Nitro-metals, a New Series of Compounds of Metals with Nitrogen Peroxide, A. E. Tutton, 524; on our Present Knowledge of Electrolysis and Electro-Chemistry, T. C. Fitzpatrick, 527; Chemistry at the British Association, 529; G. J. Fowler on the Preparation and Properties of Nitride of Iron, 529; T. W. Hogg, on Cyano-Nitride of Titanium, 529; Report of the Committee for Investigating the Action of Light upon Dyed Colours, 529; Method of Isolation and the Properties of Fluorine, MM. Moissan and Meslans, 529; the Iodine Value of Sunlight in the High Alps, Dr. S. Rideal, 529; Report of the Committee on the Action of Light on the Hydracids of the Halogens in the presence of Oxygen, 530; the Expansion of Chlorine and Bromine under the Influence of Light, Dr. Richardson, 530; Prof. P. Frankland on the Present Position of Bacteriology, more especially in its Relation to Chemical Science, 530; on Explosions in Mines, with special reference to the Dust Theory, Prof. H. B. Dixon, Mr. Hall, Mr. Galloway, Prof. Thorpe, Mr. Stokes, 530; the Aconite Alkaloids, vi.; Conversion of Aconitine into Isaconitine, W. R. Dunstan and F. H. Carr, 535; ditto, vii.; Modifications of Aconitine Aurichloride, W. R. Dunstan and H. A. D. Jowett, 535; Constituents of Kamala, I. A. G. Perkin, 535; Quantitative Method of Separating Iodine from Chlorine and Bromine, D. S. Macnair, 535; Use of Sodium Peroxide as an Analytical Agent, L. Clark, 535; Preparation of Mono-, di- and Tri-benzylamine, A. T. Mason, 535; Formula of Terpenylic Acid, S. B. Schryver, 535; Preparation of Active Amyl Alcohol and Active Valeric Acid from Fusel Oil, W. A. C. Rogers, 535; Estimates of Chlorates and Nitrates in one operation, Charlotte F. Roberts, 535; Iodide of Nitrogen, Dr. Szuhay, 547; the Glucoside of the Iris, F. Tiemann and G. de Laire, 560; Crystallised Silicide of Carbon obtained with M. Moissan's Electric Furnace, 572, 573; Fixation of Iodine by Starch, E. Rouvier, 584; Relation between the Precipitation of Chlorides by Hydrochloric Acid and the Lowering of the Boiling-point, M. R. Engel, 608; Carbide of Boron isolated, Dr. Mulhåsen, 622; Separation of Copper from Cadmium by Iodide Method, P. E. Browning, 631



- Chevalier (Rev. S.), the *Bokhara* Typhoon of October, 1892, 456, 522
- Chicago: Congress on Aërial Navigation, 596; Anthropological Congress, 570; Meteorological Congress, 570; Intended International Electrical Congress at, 131; Astronomy at the Chicago World's Fair, 573; Astronomy and Astro-Physics at Chicago, 623; Official Catalogue of the Exhibition of the German Empire at the Columbian Universal Exhibition, 176
- Chile and Argentina, Flora and Fauna of, Dr. Philippi, 619
- China Sea, Atmospheric Phenomenon in the North, Captain Chas. J. N. Rocas, 76
- China Sea, Typhoons of, 376
- Chinese Observations, Early, on Colour Adaptations, Kumagusu Minakata, 567
- Chinook Wind, the, H. M. Ballou, 21
- Chlorine and Bromine, the Expansion of, under the Influence of Light, Dr. Richardson, 530
- Cholera and Articles of Diet, Mrs. Percy Frankland, 375
- Cholera Bacillus, the, Herren Bujwid and Finkelnburg, 207
- Cholera Bacillus in Water, Methods of Detecting, Koch and Arenis, 523
- Cholera Nurseries and their Suppression, Ernest Hart, 322
- Cholera Outbreak at Greenwich, the Reported, 618
- Cholera, Virulent and Epidemic, N. Gamaleia, 360
- Chorley (J. C.), Sodium Potassium High Temperature Thermometers, 63
- Choughs, the Identity of Shakespeare's Russet-pated, J. E. Hartine, 445
- Chree (Charles), Appointment as Superintendent of Kew Observatory of, 11
- Christensen (Prof.), Action of Liquefied Ammonia on Anhydrous Chlorides of Chromium and Iron, 325, 326
- Christie (J. C.), Advanced Physiography, 339
- Chronophotography, Motion of Liquids Studied by, M. Marey, 47
- Church (Prof. A. H., F.R.S.), Turacin: a Remarkable Animal Pigment containing Copper, 209
- Churchill (William), Curious Phenomenon, 616
- Ciona, the Pervisceral Cavity in, A. H. L. Newsted, 332
- Clapham (Dr. Crochley), the Mad Head, 558
- Clark (Daniel Kinnear), the Steam Engine: a Treatise on Steam Engines and Boilers, N. J. Lockyer, 51
- Clark (J.), Detection of Arsenic in Alkaline Solution, 117; Improvements in Reinsch's Process, 117; Use of Sodium Peroxide as an Analytical Agent, 535; Lime Salts in Relation to some Physiological Processes in the Plant, 575
- Clark (J. Edmund), Daylight Meteor, March 18, 54; Soot-figures on Ceilings, 77
- Clark (Prof.), the Available Water-power of Maryland, 324
- Clark and Griffiths (Messrs.), Determination of Hour Temperatures by Platinum Thermometers, 155; Heating Effect of Small Currents necessary to Measure Resistances, 156
- Clarkson (T.), the Sampling of Iron Ore, 551
- Classen (Prof.), Tetrachloride of Lead, 232
- Classification, Evolution and, Prof. C. E. Bessey, 534
- Claude (M.), Instruments for Measuring Difference in Phase between Current in Circuit and Impressed Electromotive Force, 13
- Clava in Nairn, Investigation into the Shell-bearing Clays of, Dugald Bell, 532
- Clayton (H. H.), Six- and Seven-Day Weather Periodicities, 140
- Cleland (Prof.), Physico-Chemical and Vitalistic Theories of Life, 574
- Clerke (Ellen M.), the Planet Venus, 447
- Cleveland Iron and Steel Industries, Recent Developments in, Jeremiah Head, 356
- Climates, Geological and Solar, their Causes and Variation, Marsden Manson, 588
- Climatological Table for British Empire, 1892, 607
- Clocks, New System of Electric Control of, E. F. von Hefner-Alteneck, 445
- Clowes (Prof. Frank), British Association, Nottingham Meeting, 295, 344, 419, 443, 463, 520; Composition of the Rock of Bramcote and Stapleford Hills, 532; Sandstone near Nottingham wholly Cemented with Crystalline Barium Sulphate, 621
- Club, Proposed Learned Societies', 322
- Coakley (Prof. G. W.), Death and Obituary Notice of, 398
- "Coal-Balls," Fossils in, H. B. Stocks, 72
- Cobras attracted by Remains of Dead Cobra, 79
- Coccidæ, the Use of Ants to Aphides and, Dr. Geo. J. Romanes, F.R.S., Alfred O. Walker, 54
- Coccidia of Birds, Alph. Labbé, 536
- Cockerell (Prof. T. D. A.), Insects attracted by Solanum, 438
- Cockroach, on the Ovipositor of the, Prof. Denny, 576
- Coculesco (M. N.), Total Solar Eclipse (April, 1893), 135
- Coffee Culture, Brazil, 423
- Colardeau (E.), Experiments on Resistance of Air, &c., to Motion of Falling Bodies, 311
- Cold Wave at Hongkong, the, January, 1893—Its after Effects, Sydney B. J. Skerthly, 3
- Cole (Martin J.), Modern Microscopy, 246
- Coleridge (Lord) and Vivisection, Prof. Percy F. Frankland, F.R.S., 268
- Colin (J.), Influence of State of Surface of Platinum Electrode upon its Initial Capacity of Polarisation, 584
- Colladon (J. D.), the Work of, M. Sarrau, 360; Obituary Notice of, Dr. Ed. Sarasin, 396
- Collinge (Walter E.), Conjoint Board's Medical Biology, 75; the Lateral Canal System of Fishes, 576
- Colombo, Suggested Zoological Garden in, 510
- Colorado, Destructive Cloud-burst in, 510
- Colour: Perspective and Colour, Prof. Einthoven, 186; Contrast Colours, the True Origin of, A. M. Meyer, 274; Colour Photometry, Capt. Abney, F.R.S., 333; Alterations of Colours presented by Gratings, George Meslin, 432; the Evolution of Colour in the Genus Megascops, 559; Early Chinese Observations on Colour Adaptations, Kumagusu Minakata, 567; on the Origin of Organic Colour, F. T. Mott, 575; Is Colour-blindness a Product of Civilisation? Messrs. Blake and Franklin, 206; Hering's Theory of Colour Vision, C. L. Franklin, 517
- Coloration, Sexual, of Birds, T. C. Headley, 413
- Columbian Universal Exhibition in Chicago, Official Catalogue of the Exhibition of the German Empire at the, 176
- Colwyn Bay, Earthquake at, 179
- Combustion, Spontaneous, Prof. Vivian B. Lewes, 626
- Comets: Finlay's Comet (1886 VII.), 61, 81, 112, 135, 158, 184, 208, 276, 300, 326, 355; M. Schulhof, 233, 254; Comet Finlay and the Præsepe, 512; a Bright Comet?, 233; a New Comet, 254, 622; Ephemeris of the New Comet, Prof. E. Lamp, 276; the Discovery of the New Comet, 300; the Rordame-Quénisset Comet, 326, 401; Herr E. Lamp, 355; the Spectrum of the Rordame Quénisset Comet, Prof. Campbell, 379; Photography of Comet  $\delta$  1893, F. Quénisset, 360; Comet Appearances in the Year 1892, Prof. H. Kreutz, 380
- Common (Dr. A. A., F.R.S.), a Sensitive Spherometer, 396; Astronomical Photography, 459
- Comparative Anatomy at Oxford, Human and, Prof. E. Ray Lankester, F.R.S., 616
- Comstock (Prof. George), South Polar Cap of Mars, 15; a Determination of the Constant of Aberration, 460
- Conclusions, New, Graham Officer, Lewis Balfour, 342
- Conditions Determinative of Chemical Change, the, Prof. Henry E. Armstrong, F.R.S., 237; Prof. W. Ramsay, F.R.S., James Walker, 267
- Conference of Delegates of Corresponding Societies, 576
- Congo Tribes, Ethnographical Notes on the, Herbert Ward, 558
- Congress on Aerial Navigation, Chicago, 596
- Congress of Archaeological Societies, 251
- Congresses, Chicago Anthropological and Meteorological, 570
- Congress at Chicago, Intended Electrical, 131
- Congress, International Maritime, 272; Madison Botanical, 597
- Congress of Photographic Society, 569, 596
- Conjoint Boards' Medical Biology, Walter E. Collinge, 75
- Constable (F. C.), Soaring of Hawk, 223; Abnormal Weather in the Himalayas, 248; the Murree Hailstorm, 251
- Constant of Aberration, the, Prof. Chandler, 112; a Determination of the, Prof. Geo. C. Comstock, 460
- Constant of Universal Attraction, New Determination of the, 301, 355
- Constellations of the Far East, Kumagusu Minakata, 541
- Constellations, Grouping of Stars into, 370
- Contemporary Review, Science in the, 250, 443, 543
- Conway (W. M.), Explorations in the Karakorana, 43; the Climbing of High Mountains, 443
- Cook's (Captain) Journal during his First Voyage round the World, made in H.M. Barque *Endeavour*, 1768-1781, Sir J. D. Hooker, F.R.S., 195
- Cook (C. J. Bowen), British Locomotives, N. J. Lockyer, 586

- Cooke (M. C.), Bleeding Bread, 578  
 Copper, a New Method of Electrolytic Bright Depositing, J. W. Swan, 160  
 Copper, Turacine, a Remarkable Animal Pigment containing, Prof. A. H. Church, F.R.S., 209  
 Coral Reefs: Prof. W. J. Sollas, F.R.S., 575; Dr. Rothpletz, Gilbert Bourne, Prof. Bonney, Sir H. Howorth, Mr. Stebbing, H. O. Forbes, 576; the Great Barrier Reef of Australia, W. Saville Kent, Prof. Alfred C. Haddon, 217  
 Cordoba Durchmusterung, the, 401  
 Corinth, Isthmus of, Opening of Ship Canal across, 426  
 Cornish Mineral, Spangolite, a Remarkable, H. A. Miers, 426  
 Cornu (A.), Diffraction Gratings, Local Anomalies, 144  
 Corona Spectrum, the, J. Evershed, 268  
 Coronal Atmosphere of the Sun, the, 301  
 Corresponding Societies, Conference of Delegates of, 576  
 Corry "Protected" Aneroid, the, Edward Whymper, 160  
 Cosmology, Babylonian, P. Jensen, 2  
 Coupin (Henri), Elimination of Foreign Bodies in Acephala, 484  
 Cowper (E. A.), Death of, 78  
 Crafts (M.), Aluminium Chloride Compounds with Benzoyl Chloride and others of the Aromatic Series, 157  
 Crandall Basin, Wyoming, on the Dissected Volcano of, Prof. J. P. Iddings, 531  
 Criminals and their Detection, E. R. Spearman, 249  
 Cripps (R. A.), Galenic Pharmacy, 27  
 Crocodile's Egg with Solid Shell, J. Battersby, 248  
 Croft (W. B.), Apparatus for Observing and Photographing Interference and Diffraction Phenomena, 526; on the Plan of Science Teaching at Winchester School, 527  
 Cross (E. F.), Cellulose Thiocarbonates, 94  
 Cross (M. J.), Modern Microscopy, 246  
 Cross and Mansfield (Messrs.), Excursions of Diaphragms of Telephones, 156  
 Crosskey (R.), the Soil in Relation to Health, 196  
 Crova (M.), Photographic Study of Sources of Light (Carcel Lamp and Electric Arc), 206  
 Crump (W. B.), the Early Spring of 1893, 414  
 Crustacea, Decapod, Nephridia of, E. J. Allen, 115  
 Crystal, Illustrations of Molecular Tactics of, Lord Kelvin, 159  
 Crystals, Instruments for Study of, H. A. Miers, 63; Dielectric Constants of Biaxial, Ch. Borel, 240; the Inner Structure of Snow, G. Nordenskiöld, 592  
 Cumming (L.), Thunderbolt in Warwickshire, 342  
 Cunningham (Lieut.-Col. Allan), Soot-figures on Ceilings, 29; Simplified Multiplication, 316  
 Cunningham (J. T.), the Coloration of the Skins of Fishes, 70  
 Curie (P.), Magnetic Properties of Bodies at Different Temperatures, 38; a New Standard Condenser, 206  
 Curious Phenomenon, William Churchill, 616  
 Curtis (Prof. G. E.), Analysis of Causes of Rainfall, 631  
 Curtius (Prof.), Azolamide, 183  
 Curves by their Curvature, Drawing of, C. V. Boys, F.R.S., 116; Asymmetrical Frequency, Prof. Karl Pearson, 615  
 Cyano-Nitride of Titanium, T. W. Hogg, 529  
 Cyclone of August 28 and 29, the American, 444  
 Cyclone in Gulf of Mexico, 569  
 Cyclone, Disastrous, at Savannah, 421; Cyclone on New York Coast, 421  
 Cyclone at Williamstown, 205  
 Cyclones of November, 1891, the Three Indian, Mr. Eliot, 545  
 Cyclones and Anticyclones, Movements of Air in, 583  
 Cygni, the Variable Star Y, Prof. N. C. Dunér, 301  
 Cygnus, a New Variable, *u*, 183; New Variable Stars in, Herr Fr. Deichmüller, 573  
 Dabchick in St. James's Park, Adventures of a, T. D. Pigott, 322  
 Dakotas, Certain Climatic Features of the Two, Lieut. J. P. Finley, 599  
 Dallas (W. L.), Upper Air Currents over Arabian Sea, 239; the General Motions of the Atmosphere, 341  
 Dallinger (Dr. W. H., F.R.S.), Modern Microscopy, M. J. Cross, Martin J. Cole, 246  
 Dancing, Ethnographic Aspect of, Mrs. Lilly Grove, 557  
 Daniel (John), Polarisation, using a thin Metal Partition in a Voltmeter, 524  
 Daniell (Alfred), a Substitute for Ampère's Swimmer, 294  
 Vanvers (Sir Juland), the Manufactures of India, 37  
 Darnell-Smith (G. P.), a Method of obtaining Glochidia, 223  
 Dartmoor, Notes on, Lieut.-General McMahon, 142  
 Darwin (Prof. G. H., F.R.S.), Roche's Limit, 54  
 Daubrée on the Geological Work of High-Pressure Gas, 226  
 Daubrée (M.), Exceptionally High Temperatures in Pechelbronn Petroleum Beds, 360  
 David (Prof.), Sphene Discovered in Bathurst (New South Wales) Granite by, 78  
 Davis (W. M.), Proposed Subjects for Correlated Study by State Weather Services, 239  
 Davison (Charles), the Annual and Semi-Annual Seismic Periods, 359  
 Davy (M. Marié), Death of, 272  
 Day of the Week, a Simple Rule for finding the Corresponding, to any given Day of the Month and Year, Dr. C. Braun, 222  
 Daylight Meteor, March 18, J. Edmund Clark, 54  
 Death, Proofs of, Dr. Edwin Haward, 156  
 Defforges (M.), Distribution of Gravitation on Surface of Globe, 336; Distribution of Intensity of Gravity of Surface of Globe, MM. Orgéau, Daubrée, Cornu, Bassot, and Tisserand, 484  
 Deichmüller (Herr Fr.), New Variable Stars in Cygnus, 573  
 Delage (M.), the Cambrian of the Herault, 432  
 Delahaye (M.), M. Foubert's Map of Smokes of Paris, 78; New Electric Fire-Alarm, 423  
 Delbœuf (J.), Megamicros, or Sensible Effects of Proportional Reduction of Dimensions of Universe, 406  
 Delebecque (A.), Changes in Tête Rousse Glacier since St. Gervais Catastrophe, 407  
 Delegates of Corresponding Societies, Conference of, 576  
 Demoussy (M.), the Quantities of Water contained in Arable Lands after a Prolonged Drought, 72  
 Denning (W. F.), the April Meteors, 5; Meteor Observations, 135; the August Meteors (1893), 374  
 Denny (Prof.), on the Ovipositor of the Cockroach, 576  
 Denza (P. F.), Shooting Stars of August, 1893, 535  
 Depolarisers, the Nature of, Prof. H. E. Armstrong, F.R.S., 308  
 Deslandres (M.), the Total Solar Eclipse (April, 1893), 81  
 Desulphurisation of Iron, John Parry, 427  
 Determinants, a Short Course in the Theory of, L. G. Weld, 612  
 Determinations of Gravity, 158  
 Determination, New, of the Constant of Universal Attraction, 301, 355  
 Deutsche Mathematiker-Vereinigung Exhibition at Munich, the, 619  
 Deutsche Seewarte Report for 1892, 445  
 Dewar (Prof. J., F.R.S.), Magnetic Properties of Liquid Oxygen, 89; Refractive Indices of Liquid Nitrogen and Air, 620  
 Diamond, Artificial, obtained by K. D. Khroushchhoff, 207  
 Diatomaceæ, an Introduction to the Study of the, Frederick Wm. Mills, 537  
 Diatropoff (M.), Discovery of the *Bacillus Anthracis* in Well-Mud, 230  
 Dickie (Dr. Hugh), Elements of Physiography, 3  
 Dictionary of Applied Chemistry, Prof. T. E. Thorpe, F.R.S., Sir H. E. Roscoe, F.R.S., 145  
 Dielectrics, on the Electric Strength of Solid Liquid and Gaseous, Profs. Macfarlane and G. W. Pierce, 461  
 Diet, Cholera and Articles of, Mrs. Percy Frankland, 375  
 Dieterici (C.), Vapour Pressure of Aqueous Solution, 620  
 Differential Calculus for Beginners, Joseph Edwards, 539  
 Difficulty in Weismannism Resolved, a, Prof. Marcus Hartog, 28  
 Diffusion, Gaseous, Prof. Herbert McLeod, F.R.S., 104  
 Digestive Ferments of a Large Protozoon, on the, Prof. Marcus Hartog and Augustus E. Dixon, 575  
 Dinosaurs, some Recent Restorations of, Prof. O. C. Marsh, 437; R. Lydekker, 302  
 Disinfectant, Value of Ammonia Vapour as a, Herr Rigler, 298  
 Disinfectants and Micro-Organisms, 161  
 Disinfectants at High Temperatures and with Moisture, MM. Chamberland and Pernbach, 377  
*Distichopora violacea*, Early Stages in Development of, Dr S. J. Hickson, 332  
 Dixon (A. E.), Interactions of Thiourea and Haloid Derivatives of Fatty Acids, 94; on the Digestive Ferments of a Large Protozoon, 575  
 Dixon (A. L.), on a Theorem for Bicircular Quartics and

- Cyclides corresponding to Ivory's Theorem for Conics and Conicoids, 95
- Dixon (Edward T.), the Fundamental Axioms of Dynamics, 101, 149; Dr. Lodge's Foundation of Dynamics, 166
- Dixon (Prof. H. B.), Explosions in Mines, with special reference to the Dust Theory, 530
- Doberck (Dr. W.), Typhoons of China Sea, 376
- Documents, Smithsonian Institution, Prof. Cleveland Abbe, 6
- Dodgson (Charles L.), Pillow Problems, 564
- Dohrn (Prof. Anton), Publications of the Zoological Station at Naples, 440
- Donald (C. M.), Antarctic Exploration Cruise of the Dundee Whalers, 555
- Donnan (F. G.), Organisation of Scientific Literature, 436
- Doolittle (Prof. C. L.), Variations of Latitude, 451; Latitude Determination at Bethlehem, 1892-3, 460
- Drainage in the Rock River Basin in Illinois, on Changes of, Frank Leverett, 462
- Drawing, Compulsory Laws of Error in, Arthur L. Haddon, 402, 416
- Dredging Expeditions in the Irish Sea, 575
- Dreyer (Dr. Julius) Die Gastropoden von Häring bei Kirchbichl in Tirol, 567
- Drought, the Great, of 1893, 295
- Drought and Heat at Shirenewton Hall in 1893, E. J. Lowe, F.R.S., 436
- Drought Cycles, M. C. Maze, 482
- Drude (P.), Relation of Dielectric Constants to Indices of Refraction, 312
- Drummond (A. T.), Lake Memphramagog, 12; Colours of Canadian Flowers, with Relation to Time of Flowering, 37
- Duars, Bengal, Experiences in the, E. Heawood, 555
- Dublin Royal Society, 47, 143, 287
- Dublin, Rain making Experiments at, 522
- Dubois (Eng.) Die Klimate der Geologischen Vergangenheit und ihre Beziehung zur Entwicklungsgeschichte der Sonne, 266
- Dacretet (C.), Method for making High Resistances without Self-induction, 353
- Dufour (M.), the Scintillation of Stars, 600
- Duhamel Dumonceau, Statue of, 596
- Dulcin, a New Saccharin Substance, Prof. Kossel, 47
- Dumont (M.), the Quantities of Water contained in Arable Land after a Prolonged Drought, 72
- Dundee Whalers, Cruise of the, to the Antarctic Regions, W. S. Bruce and C. M. Donald, 555
- Dunér (Prof. N. C.), the Variable Star  $\gamma$  Cygni, 301
- Dunlop (Dr. Andrew), Raised Beaches and Rolled Stones at High Level in Jersey, 191
- Dunn (E. J.), the Bendigo Gold Fields, 207; Palæozoic Glaciation in the Southern Hemisphere, 458
- Dunstan (W. R.), Isomerism of Paraffinic Aldoximes, 22; the Aconite Alkaloids, vi. Conversion of Aconitine into Isaconitine, 535; vii. Modifications of Aconitine Aurichloide, 535
- Duparc (L.), Changes in Tête Rousse Glacier since St. Gervais Catastrophe, 407
- Durham College of Science, Agricultural Scholarships, 36
- Dust Theory, Explosions in Mines with special reference to the, Prof. H. B. Dixon, Mr. Hall, Mr. Galloway, Prof. Thorpe, Mr. Stokes, 530
- Dust Whirl or (?) Tornado, a, J. Lovel, 77
- Dvorak (Prof. V.), Apparatus for Demonstrating Oscillation of Air, 13; Improved Apparatus for Exhibiting Phenomena of Gaseous Diffusion, 79
- Dwarfs, Racial, in the Pyrenees, J. S. Stuart-Glennie, 294
- Dyed Colours, Report of the Committee for investigating the Action of Light upon, 529
- Dyeing, a Manual of, Edmund Knecht, Christopher Rawson, and Richard Loewenthal, Prof. R. Meldola, F.R.S., 170
- Dyer (Dr. Henry), Science Teaching in Schools, 148
- Dymond (T. S.), Isomerism of Paraffinic Aldoximes, 22
- Dynamics: the Fundamental Axioms of Dynamics, Prof. Oliver Lodge, F.R.S., 62, 101, 126, 174; Edward T. Dixon, 101, 149; Prof. A. W. Rücker, F.R.S., 126; Prof. J. G. MacGregor, 126, 223; the Foundation of Dynamics, Prof. O. J. Lodge, F.R.S., 117, 167; Prof. Minchin, Prof. O. Henrici, Dr. C. V. Burton, Mr. Swinburne, Mr. Blakeley, Prof. S. P. Thompson, Mr. Dixon, 166; Dynamo-Electric Machinery, Silvanus P. Thompson, 193; the Dynamo, C. C. Hawkins and F. Wallis, Prof. A. Gray, 244; Original Papers on Dynamo Machinery and Allied Subjects, Dr. J. Hopkinson, F.R.S., Prof. A. Gray, 244
- Dyson (F. W.), the Potential of an Anchor Ring, 45
- Ear, the Morphology of the Vertebrate, Howard Ayers, 184
- Early Asterisms, the, J. Norman Lockyer, F.R.S., 438, 518
- Early Spring of 1893, the, W. B. Crump, 414
- Early Temple and Pyramid Builders, on the, J. Norman Lockyer, F.R.S., 55
- Earth, New Determination of Mass and Density of, Alphonse Berget, 251
- Earth, the Mean Density of the, Prof. J. H. Poynting, F.R.S., 370
- Earth, Magnetism of, in neighbourhood of Magnetic Rocks, Messrs. Oddone and Franchi, 274
- Earth Lore, Fragments of, James Geikie, F.R.S., 385
- Earth Movements, Herr E. von Rebeur Paschwitz, 326
- Earth, the Period of Vibration of Disturbances of Electrification of the, Prof. G. F. Fitzgerald, 526
- Earthquakes: Earthquake in Baluchistan, 348; at Colwyn Bay, 179; at Leicester, 351; at Mur Valley, 351; on Shores of Adriatic, 376; Erdbebenkunde. Die Erscheinungen und Ursachen der Erdbeben, die Methoden ihrer Beobachtungen, Dr. Rudolf Hoernes, 363; Étude sur les Tremblements de Terre, Léon Vinot, 363; Surface Changes accompanying Japanese Earthquake of 1891, Prof. Koto, 574
- Ebert (Prof. H.), the Production of Electric Oscillations and their Relations to Discharge Tubes, 91; Electrical Discharges, 140; Luminous Phenomena in Vessels filled with Rarefied Gas under Influence of Rapidly Alternating Electric Fluids, 607; Method of Estimating the Radiating Power of an Atom, 527
- Ebermayer (E.), Climatic Effects of Forests upon Neighbourhood, 284
- Ebonite for Heat-waves, Diathermanous Power of, Riccardo Arno, 299
- Echinocyanus pusillus, Prof. Hjalmar Théel, 330; E. W. Macbride, 369
- Echinoderms, Nutrition of, Marcelin Chapeaux, 583
- Echols (Prof.), Wronski's Expansion, 187
- Eckhardt (Dr.), Instrument for Trisecting Angles, 353
- Eclipse, Total Solar (April, 1893), 40; Prof. T. E. Thorpe, F.R.S., 53; M. Deslandres, 81; M. Bigourdan, 111; M. N. Coculesco, 135; Observations made during the, 326
- Eclipses, Total Solar, 355
- Edinburgh Mathematical Society, Proceedings of the, 340
- Edinburgh in Prehistoric Times, the Site of, H. M. Cadell, 136
- Edinburgh Royal Society, 71, 287
- Edser (Edwin), Apparatus illustrating Prof. Michelson's Method of Producing Interference Bands, 159, 372
- Education: the Decreased Grant to the University of Melbourne, 228; Educational Status of Tasmania, 232; University and Educational Endowment in America, W. T. Thielton-Dyer, F.R.S., 248; Science Classes in Connection with the London County Council, 383; Death and Obituary Notice of Prof. M.F. A. Newell, 421; Geology in Secondary Education, 533; Technical Education, Agriculture-teaching in Russian Schools, 156; the New Technical Educator, 388
- Edwards (Joseph), Differential Calculus for Beginners, 539
- Eel, Process of Secretion in Skin of Common, Prof. E. W. Reid, 260
- Eels, Electric, in Caraccas, Capture by means of Wild Horses, Humboldt's Story controverted, 324
- Egg, Crocodile's, with Solid Shell, J. Battersby, 248
- Egg, Fowl's, Mechanical Genesis of Form of, Dr. J. A. Ryder, 597
- Egypt, the Eastern Desert of, E. A. Floyer, 40
- Egypt, the Desert Sands of Lower, A. Andouard, 336
- Egypt, the Influence of, upon Temple Orientation in Greece, J. Norman Lockyer, F.R.S., 417
- Einthoven (Prof.), Perspective and Colour, 186
- Elasticity, Mr. Love's Treatise on, A. B. Basset, F.R.S., 415, 543
- Elasticity of Stretching, on Fatigue in the, Joseph O. Thompson, 461
- Elberfeld Farbenfabriken, Research Laboratories attached to, 29
- Elbe at Magdeburg, Chemical and Bacterial Condition of, Herr Ohlmüller, 399
- Elbs (Dr.), Improved Method of Preparing Ammonium Salt of Persulphuric Acid, 400



- Electricity: Instrument for Measuring Difference in Phase between Current in Circuit and Impressed Electromotive Force, 13; Reflection of Electrical Waves at Extremity of Linear Conductor, M. Birkeland, 14; the Reflection of Electrical Waves in Wires, J. von Geitler, 110; Interference of Electric Waves after Reflection from Metallic Screen, Messrs. Saracin and De La Rive, 252; Interference Phenomena in Electric Waves passing through Different Thicknesses of Electrolyte, G. U. Yule, 261; on the Passage of Electric Waves through Layers of Electrolyte, 527; Electro-Optics, A. B. Basset, F.R.S., 34; the Electro-Chemical Actinometer, M. Rigollot, 38; Influence of Longitudinal Magnetisation on Electromotive Force, M. Chassagny, 38; Luminous Discharges in Electrodeless Vacuum Tubes, 45; Oscillations of Low Frequency and their Resonance, Mr. Pupin, 60; the Production of Oscillations and their Relations to Discharge Tubes, H. Ebert and E. Wiedemann, 91; Apparatus for producing Hertzian Oscillations of Short Wavelength, Augusto Righi, 181; Oscillations of very Small Wave-lengths, Augusto Righi, 299; Methods for Experiments on Oscillations of Comparatively Long Period, P. Janet, 423; Oscillations of Lightning Discharges and Aurora Borealis, John Trowbridge, 535, 571; the Cause of Earth Currents, O. E. Walker, 60; High Frequency Electric Experiments, A. A. C. Swinton, 63; on Light and other High Frequency Phenomena, Nikola Tesla, 136; Behaviour of Positive and Negative Electricity in High Frequency Discharges, Messrs. Harvey and Hird, 252; Electrolysis of Steam, J. J. Thomson, F.R.S., 70; Theoretical Investigations on Electrolysis by Alternating Currents, R. Malagoli, 423; on our Present Knowledge of Electrolysis and Electrochemistry, T. C. Fitzpatrick, 527; M. Gouré de Villemonette's Attempts to Prepare Metallic Surfaces giving a Constant Difference of Potential, 78; Comparison of Intensities of Light by the Photoelectric Method, J. Elster and H. Geitel, 91; Electric Organ of the Skate, the, J. C. Ewart, 93; Capture by means of Wild Horses of Electric Eels in Caraccas, Humboldt's Story controverted, 324; Electric Fishes, Dr. McKendrick, 593; Opening of New Electrical and Engineering Laboratories at University College, 107; Question of True Hysteresis in Case of Dielectrics, Charles Borel, 110; Electrical Congress at Chicago, Intended, 131; Telephonic Communication by Water and Gas Pipes, 132; Long-distance Telephony, Prof. J. Perry, F.R.S., 263; Researches with the Electric Furnace, M. Moissan, 134; Volatilisation of Metals in the Electric Furnace, M. Moissan, 207; Crystallised Silicide of Carbon obtained with M. Moissan's Electric Furnace, 572, 573; Electrical Discharges, H. Ebert and E. Wiedemann, 140; Absolute Measurements on Discharge from Points, Julius Precht, 141; Apparatus for Studying Action of Discharge on Oxygen, W. A. Shenstone and M. Priest, 159; New Material for High Resistances, E. Jonas, 155; Heating Effects of Small Currents necessary to measure Resistance, Messrs. Griffiths and Clark, 155; Determination of Electrical Resistances by means of Alternating Currents, F. Kohlrausch, 259; Bridge and Commutator for Comparing Resistances, F. H. Nalder, 263; M. E. Ducretet's Method for Making High Resistances without Self induction, 353; Instrument for Measuring Resistance of Human Body, M. Mergier, 353; on Standards of Low Electrical Resistance, J. Viriamu Jones, 528; Resistance of Bismuth, M. Van Aubel, 571; the Hydrophone, Capt. McEvoy, 159; a New Method of Bright Depositing Electrolytic Copper, J. W. Swan, 160; Magnetic Viscosity, J. Hopkinson, F.R.S., E. Wilson and F. Lydall, 165; Physiological Effects of Alternating Currents from Aerostatic Machines, Dr. Stephane Leduc, 180; the Capacity of Polarisation, M. Bouty, 180; Polarising Effects of Refraction of Light, K. Exner, 260; the Nature of Depolarisers, Prof. H. E. Armstrong, F.R.S., 308; Polarisation of Platinum Electrodes in Sulphuric Acid, J. B. Henderson, 310; Residues of Polarisation, E. Bouty, 336; Polarisation, using a Thin Metal Partition in a Voltmeter, John Daniel, 524; Influence of State of Surface of Platinum Electrode upon its Initial Capacity of Polarisation, J. Colin, 584; an Electrical Horsemanship, 181; Waterpipes damaged by Electrolytic Action of Return Current from Electric Railway, C. H. Morse, 181; Existing Submarine Cables, 181; Effect of City and South London Electric Railway on Earth, W. H. Preece, F.R.S., 205; Dynamo Electric Machinery, Silvanus P. Thompson, 193; a New Standard Condenser, P. Curie, 206; M. Abraham, 206; Action of Platinum and Copper Electrodes, and of Acid and Neutral Solutions upon Amount of Copper Deposit, Dr. Oettel, 230; Experiments upon Attraction between Two Vacuum Tubes, Sir David Salomons, 230; the Rotatory Power of Quartz at Low Temperatures, MM. Soret and Guye, 230; Specific Rotation of Salts independent of Electrolytic Dissociation, Herr Schönrock, 230; Dielectric Constants of Biaxial Crystals, Ch. Borel, 240; Temperature Coefficient of Dielectric Constant of Pure Water, F. Heerwagen, 260; Relation of Dielectric Constants to Indices of Refraction, P. Drude, 312; Alternate Current utilised for investigating Dielectric Constants of Solids, Dr. G. Benischke, 378; a New Correlation between Light and Electricity, Dr. G. B. Rizzo, 377; Prof. Perry's New Electric Current Meters, 252; Influence Machines, W. R. Pidgeon, J. Wimshurst, and E. E. Robinson, 263; Compact Sulphuric Acid Small-resistance Voltmeter, R. W. Paul, 263; Use of Cupric Nitrate in the Voltmeter, 431; Simple Form of Automatic Cut-out, Felix Leconte, 274; a Substitute for Ampère's Swimmer, Alfred Daniell, 294; Hanna Adler, 370; a One-Volt Standard Cell, H. S. Carhart, 309; the Prevention and Control of Sparking, W. B. Sayers, 324; Sir Francis Ronald's Experiments in Telegraphy, John Sime, 325; Contributions to the Theory of Secondary Batteries, Franz Streintz, 333; Electricity and Life, H. N. Lawrence, 350; Electric Excitability of Muscles after Death, the Myophone, M. d'Arsonval, 399; Lord Kelvin's New Electrical Measuring Instruments, 399; Flow and Dissipation of Energy in Electric Circuits of Measurable Inductance and Capacity, A. W. Porter, 406; Electrical Action of Light upon Silver and its Haloid Compounds, Col. Waterhouse, 423; New Electric Fire Alarm, MM. Delahaye and Boutille, 423; Vorlesung über Maxwell's Theorie der Electricität und des Lichtes, Dr. Ludwig Boltzmann, 435; the Works of the Cataract Construction Company at Niagara Falls, 444; Water Power as a Source of Electricity, A. B. Snell, 557; New System of Electric Control of Clocks, F. von Hefner-Alteneck, 445; M. d'Arsonval's Experiments on Effects of Strong Alternating Magnetic Fields on Animals, 481; Dr. W. S. Hedley on M. d'Arsonval's Work, 481; on the Period of Vibration of Disturbances of Electrification of the Earth, Prof. G. F. Fitzgerald, 526; Electric Interference Phenomena, E. H. Barton, 527; Untersuchungen über die Ausbreitung der Elektrischen Kraft, Dr. Heinrich Hertz, 538; Electric Heating Appliances for Domestic Use, Mr. Binswanger, 546; Cost of Electric Lighting of Trains, 546; Relative Cost of Conductors with Different Systems of Electrical Power Transmission, 556; Variable Power Gear for Electrical Locomotives, Mr. Beaumont, 557; A Manual of Electrical Science, Geo. J. Burch, 583; the Effect of Water Vapour on Electrical Discharges, Prof. J. J. Thomson, 605; Luminous Phenomena in Vessels filled with Rarefied Gas under influence of Rapidly Alternating Electric Fluids, H. Ebert and E. Wiedemann, 607; Solubility of some "Insoluble" Bodies in Water determined by Electric Conductivity of Solution, F. Kohlrausch and F. Rose, 607; Generation of Electricity by Small Drops, L. Holz, 607; Conductivity of Copper Chloride Solution, R. J. Holland, 620; Discrepancies in Values obtained for Difference of Potential required to pierce Paraffin Slab, Dr. Monti, 620; Electrical Method of Fog-signalling, 621; the Thickness and Electrical Conductivity of Thin Liquid Films, A. W. Reinold, F.R.S., 624; Electric Conveyance of Heat, L. Houllevigue, 632
- Elgar (Dr. F.), Fast Ocean Steamships, 278  
 Eliot (Mr.), the Three Indian Cyclones of November, 1891, 545  
 Elliott (Scott), Proposed Exploration of Uganda, 444  
 Ellis (J.D.), Experiments on Combinations of Induced Draughts and Shot Air, applied to Marine Boilers, 278  
 Ellis (T. Mullett), Reveries of World's History from Earth's Nebulous Origin to its Final Ruin; or, the Romance of a Star, 411  
 Elms, Artistic Rows of, Rev. Alex. Freeman, 223  
 Elster (J.), Comparison of Intensities of Light by the Photoelectric Method, 91  
 Embryology, Vertebrate, A. Milnes Marshall, Prof. E. Ray Lankester, F.R.S., 265  
 Emerson (P. H.), on English Lagoons, 515  
 Emin Pasha, the Reported Death of, 481  
 Enamel for Protecting Cast-iron, New, Fletcher, Russell and Co., 57



- Encyclopædia of Technical Education, an, 388  
 Energetics, the Third Principle of, H. Le Chatelier, 632; W. Meyerhoffer, 456  
 Energy, the Decomposition of, into Two Factors, W. Meyerhoffer, 523  
 Engel (Dr.), the Development of Blood Corpuscles, 47  
 Engel (M. R.), Relation between the Precipitation of Chlorides by Hydrochloric Acid and the Lowering of the Boiling Point, 608  
 Engine, Steam, a Handbook on the, Herman Haeder, N. J. Lockyer, 314  
 Engineering: the Interdependence of Abstract Science and Engineering, Dr. William Anderson, F.R.S., 65; Death of E. A. Cooper, 78; Opening of New Engineering and Electrical Laboratories at University College, 107; Institution of Civil Engineers, 131; Institution of Mechanical Engineers, 356; Civil Engineering, Death and Obituary Notice of Thomas Hawksley, 522; Pocket-Book of Useful Formulæ and Memoranda for Civil and Mechanical Engineers, Sir Guilford L. Molesworth and Robert Bridges Molesworth, 610  
 England, the Archæological Survey of, 272  
 English Lagoons, on, P. H. Emerson, 515  
 Entomology: Swarms of Amphipods, Prof. W. A. Herdman, F.R.S., 28; the Use of Ants to Aphides and Coccidæ, Dr. Geo. J. Romanes, F.R.S., Alfred O. Walker, 54; the Sound Producing Organs of Ants, Dr. D. Sharp, F.R.S., 65; the Digestive Processes in the Acarina, A. D. Michael, 71; What becomes of the Aphis in the Winter? T. A. Sharpe, 77; Locust Swarms in South Africa, 95; Locust Plagues, Col. Swinhoe, 95; Entomological Society, 95, 191, 607; Notes from the Habits of some Living Scorpions, R. I. Pocock, 104; Singular Swarms of Flies, Prof. F. Jeffrey Bell, 127; Henry Cecil, 127; R. E. Froude, 103, 176; Baron C. R. Osten Sacken, 176; Shower of Ants and Flies in Cambridgeshire, 351; M. E. B. Poulton, F.R.S., appointed Hope Professor at Oxford, 154; Examples of Mimicry in Insects, 160; the Stainton Collection of Lepidoptera, Lord Walsingham, 322; Plague of Wasps in Southern Counties, 351; the Ox Bot-fly in the United States, Prof. C. V. Riley, 378; Numerous Insects washed up by the Sea, Sophie Kropotkin, 370; Oswald H. Latter, 392; the Fungus Gardens of Certain South American Ants, John C. Willis, 392; a Few Remarks on Insect Prevalence during the Summer of 1893, Eleanor A. Ormerod, 394; Insects attracted by Solanum, Prof. T. D. A. Cockerell, 438; the Hessian Fly in Norway, 618; a New Enemy of the Vine, *Blanyulus guttulatus*, M. Fontaine, 632  
 Ephemeris of the New Comet, Prof. E. Lamp, 276  
 Equatorial Mounting, a Simple, 401  
 Equilibre des Liqueurs, Recit de la Grande Expérience de l', Blaise Pascal, 436  
 Error, a Remarkable Source of, 401  
 Error in Drawing, Compulsory Laws of, Arthur L. Haddon, 402, 416  
 Eruptive Bosses, on Structures in, which resemble those of Ancient Gneisses, Sir Archibald Geikie, F.R.S., 531  
 Eruptive Rocks and Gneiss, Augen-Structure in Relation to the Origin of, J. G. Goodchild, 532  
 Eruptive Rocks of Gran (Christiana Region), on the Genetic Relations of the Basic, Prof. W. C. Brögger, 531  
 Esker Systems of Ireland, the, Prof. Sollas, 533  
 Espin (T. E.), Stars with Remarkable Spectra, 233  
 Ether, the Luminiferous, Sir G. G. Stokes, 306  
 Ether and Matter, on the Connection between the, Prof. O. Lodge, 527, 528  
 Ethnographic Aspect of Dancing, Mrs. Lilly Grove, 557  
 Ethnographical Notes on the Congo Tribes, Herbert Ward, 558  
 Ethnology: Seventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1885-86, J. W. Powell, 3; the Gilbert Islands, Dr. O. Finsch, 92; Life with Trans-Siberian Savages, E. Douglas Howard, 339  
 Etna, Rise of Lava in Crater of, Dr. Johnston-Lavis, 179  
 Eudiometer, the Word, Philip J. Hartog, 127  
 European Laboratories of Marine Biology, 404  
 Eustis, Florida, Subtropical Botanical Laboratory established at, 545  
 Evans (Sir John, Treas. R.S.), Society of Chemical Industry, 279  
 Evershed (J.), the Corona Spectrum, 268  
 Evolution and Classification, Prof. C. E. Bessey, 534  
 Evolution of Colour in the Genus *Megascops*, 559  
 Ewart (J. C.), the Electric Organ of the Skate, 93  
 Ewing (Prof. J. A., F.R.S.), Magnetic Curve Tracers, 64; Magnetic Qualities of Iron, 335  
 Exhibition, Antwerp, "Castle in the Air" for forthcoming, 569  
 Exhibition of Fruit Culture, Projected Russian International, 376  
 Exhibition at Munich, the Deutsche Mathematiker-Vereinigung, 619  
 Exhibition at San Francisco, Projected International, 445  
 Exner (K.), Polarising Effects of Refraction of Light, 260  
 Expansions, Apparatus for Measuring, 461  
 Experts, the Position of Scientific, 381, 423  
 Faber (H.), the Linear Transformations between Two Quadrics, 95  
 Falkenhorst (G.), Hygroscopic Plants, 253  
 Fauna and Flora of Chile and Argentina, Dr. Philippi, 619  
 Fauna, a Vertebrate, of Argyll and the Inner Hebrides, J. A. Harvie-Brown and T. E. Buckley, 123  
 Faye (H.), the "Serpent d'Eau" of the Rhône at Geneva, 584  
 Fellahin of Palestine, Astronomy of the, 601  
 Fenton (H. J. H.), Oxidation of Tartaric Acid in Presence of Iron, 94  
 Fernbach (M.), Greater Efficiency of Disinfectants at High Temperatures and with Moistures, 377  
 Festing (Major-General), Photometry, 190  
 Fidler (T. Claxton), a Practical Treatise on Bridge Construction, 612  
 Field Voles, the Plague of, 282  
 Films, the Thickness and Electrical Conductivity of Thin Liquid, A. W. Reinold, F.R.S., 624  
 Finger-Prints, Supplementary Chapter to Mr. Francis Galton's Book on, 182  
 Finger-Prints in the Indian Army, Francis Galton, F.R.S., 595  
 Finkelnberg (Herr), the Cholera Bacillus, 207  
 Finlay's Comet (1886, vii.), 61, 81, 112, 135, 158, 184, 208, 276, 300, 326, 355; M. Schulhof, 233, 254; Comet Finlay and the Præsepe, 512  
 Finley (J. P.), Certain Climatic Features of the Two Dakotas, 599  
 Finsch (Dr. O.), the Gilbert Islands, 92  
 Fire-Alarm, New Electric, MM. Delahaye and Boutille, 423  
 Fireball of January 13, 1893, Prof. H. A. Newton, 524  
 Fish Culture; the Projected Stocking of Yellowstone Park Waters, 424  
 Fishes, on the Effect of the Stimulation of the Vagus on Disengagement of Gases in the Swim-bladder of, Dr. Christian Bohr, 575  
 Fishes, the Lateral Canal System of, W. E. Collinge, 576  
 Fisher (Dr. A. K.), Hawks and Owls the Farmer's Friends, 133  
 Fisher (Osmond), Rigidity not to be relied upon in Estimating Earth's Age, 187  
 Fisher (Prof. W. R.), the Use of Scientific Terms, 590  
 Fitzgerald (Prof. G. F.) on the Period of Vibration of Disturbances of Electrification of the Earth, 526  
 Fitzgerald (Prof. Maurice), the Viscosity of Liquids, 45  
 Fitzpatrick (T. C.), on Our Present Knowledge of Electrolysis and Electro-Chemistry, 527  
 Fizeau and others (MM.), Report on a Memoir, by M. Defforges, on the Distribution of Intensity of Gravity at Surface of Globe, 484  
 Flames, Experiments to Demonstrate Structure of, Prof. Smithells, 64  
 Flashing Lights for Marine Purposes, O. T. Olson, 557  
 Fleck (Dr.), the Organo-Metallic Compounds of Magnesium, 424  
 Fletcher (G.), the Principles of Agriculture, 73  
 Fletcher (L., F.R.S.), the Williams Collection of Minerals, 357  
 Fletcher (W. H. B.), Hybrids between *Cymatophora ocularis* and *Cymatophora or*, 607  
 Fletcher, Russell and Co.'s New Enamel for Protecting Cast-iron, 571  
 Flies, Singular Swarms of: R. E. Froude, 103, 176; Prof. F. Jeffrey Bell, 127; Henry Cecil, 127; Baron Osten Sacken, 176  
 Flies, Clouds of, in Michigan, C. D. McLouth, 545  
 Flint Industry at Brandon, the, Edward Lovett, 180

- Flints said to be of Indian Manufacture, the American Ice-Age Drift, W. H. Holmes, 253
- Flood, the Glacial Nightmare and the, Sir Henry H. Howorth, F.R.S., Prof. T. McKenny Hughes, F.R.S., 242
- Floods, Disastrous, in Austria, 376
- Flora, the New, and the Old in Australia, A. G. Hamilton, 161
- Flora of Greenland, the, 186
- Flora and Fauna of Chile and Argentina, Dr. Philippi, 619
- Floras, the Distribution of Marine, George Murray, 257
- Flower (Sir William H., F.R.S.), Museums Association, 234, 254
- Flowers and Insects; Labiate, Chas. Robertson, 619
- Floyer (E. A.), the Eastern Desert of Egypt, 40
- Fluids, the Mechanics of, Geo. M. Minchin, Prof. A. G. Greenhill, F.R.S., 457
- Fluorine, the Method of Isolation and the Properties of, MM. Moissan and Meslans, 529
- Flying Apparatus, New, P. H. Lilienthal, 571
- Fog-Signalling, Electrical Methods of, 621
- Fogs and Horticulture, Prof. F. W. Oliver, 18
- Folie (F.), Astronomical Deductions from Pulkowa Latitude Observations, 583
- Fontaine (M.), a New Enemy of the Vine, *Blanyulus guttulatus*, 632
- Fonvielle (W. de), Thermometer Soundings in the High Atmosphere, 160
- Forbes (H. O.), Discoveries in the Chatham Islands, Dr. Alfred R. Wallace, 27, 74, 126, 174, 370; Prof. Alfred Newton, F.R.S., 101, 150
- Forbes (H. O.), Coral Reefs, 576
- Forsyth (Dr. A. R.), Theory of Functions of a Complex Variable, 169
- Fortin (l'Abbé A.), Sécheresse 1893, ses Causes, 587
- Fortnightly Review, Science in the, 250, 349, 443, 543
- Fossils in Coal-Balls, H. B. Stocks, 72
- Fossils; Abnormal Forms of *Spirifer lineata* from Carboniferous Limestone, F. R. C. Reed, 143
- Foster (Prof. Michael, Sec. R.S.), the Rede Lecture, 178
- Foubert's (M.), Map of Smokes of Paris, M. Delahaye, 78
- Fountains, Luminous, on a Small Scale, M. Trouvé, 12
- Foussereau (G.), Polarization Rotatoire, Réflexion et Réfraction Vitreuses, Réflexion Métallique, 266
- Fowke (Frank Rede), Surgery and Superstition, 87
- Fowler (G. J.) on the Preparation and Properties of Nitride of Iron, 529
- Fraenkel (Prof.), the Methods of Speech-Production, 407
- France: Au Bord de la Mer, Géologie, Faune et Flore des Côtes de France, Dr. E. L. Trouessart, 74; the Population of France, 108; France and International Time, W. de Nordling, 330; Meeting of the French Association, Prof. J. P. O'Reilly, 448; Geological Survey Map of France, 482
- Franchi (Signor), Earth's Magnetism in neighbourhood of Magnetic Rocks, 274
- Franchimont (Mr.), Considerations on Tautomeric Form of Glucose, 312
- Frankland (Prof. Percy F., F.R.S.), Lord Coleridge and Vivisection, 268; on the Present Position of Bacteriology, 530
- Frankland (Mrs. Percy), Cholera and Articles of Diet, 375; Water Bacteria, 386
- Franklin Institute, John Scott Prize Awards, 376
- Franklin (C. L.), Hering's Theory of Colour Vision, 517
- Franklin and Blaeu (Messrs.), Is Colour-Blindness a Product of Civilisation, 206
- Fraser (Dr. T. R., F.R.S.), the Arrow-Poison of East Equatorial Africa, 92
- Freaks, Frost, Lester F. Ward, 214
- Freeman (Rev. Alex.), Artistic Rows of Elms, 223
- Frequency Curves, Asymmetrical, Prof. Karl Pearson, 615
- Friedel (M.), Aluminium Chloride Compounds with Benzoyl Chlorides and others of the Aromatic Series, 157
- Friedrich (Prof.), Tetrachloride of Lead, 232
- Fromme (Herr), Micro-Organisms producing Sulphuretted Hydrogen, 352
- Frost Freaks, Lester F. Ward, 214
- Froude (R. E.), Singular Swarms of Flies, 103, 176
- Frowde (Henry), Helps to the Study of the Bible, 539
- Fruit Culture, Projected Russian International Exhibition of, 376
- Fry (Rt. Hon. Sir Edward, F.R.S.), Spring and Autumn of 1893, 509
- Fuel Supply, Eventual Exhaustion of, 503
- Functions of a Complex Variable, Theory of, Dr. A. R. Forsyth, Prof. W. Burnside, F.R.S., 169
- Fundamental Axioms of Dynamics, the, Prof. Oliver Lodge, F.R.S., 62, 101, 126, 174; Edward T. Dixon, 101, 149; Prof. A. W. Rücker, F.R.S., 126; Prof. J. G. MacGregor, 126, 223
- Fundy, Tides of Bay of, Gustav Kobbé, 444
- Funeral Rite in Modern Greece, the Breaking of Clay Vessels as a, Prof. N. G. Politis, 445
- Fungi, Increase of Known Species of, 298
- Fungus Gardens of Certain South American Ants, the, John C. Willis, 392
- Furnace, Electric, Researches with the, M. Moissan, 134
- Galenic Pharmacy, R. A. Cripps, 27
- Galloway (Mr.), Explosions in Mines, with Special Reference to the Dust Theory, 530
- Galls, Vegetal, on the Ætiology and Life-History of some, and their Inhabitants, C. B. Rothera, 575
- Galton (Francis, F.R.S.), Supplementary Chapter to Book on Finger-Prints, 182; Finger-Prints in the Indian Army, 595; Identification, 222
- Gamaleia (N.), Virulent and Epidemic Cholera, 360
- Gamble (J. S.), the Greatest Rainfall in Twenty-four Hours, 459
- Garbett (E. L.), Suicide of Rattlesnake, 438
- Gardner (J. A.), Researches on the Terpenes, III.; Action of Phosphorous Pentachloride on Camphene, 262
- Garrod (Sir Alfred, F.R.S.), Urea in Blood of Birds and Animals, 142
- Gas, Daubrée on the Geological Work of High-Pressure, 226
- Gas, Oxy-oil Process for increasing Illuminating Power of Coal, 599
- Gases, an Objection to the Kinetic Theory of, H. Poincaré, 72
- Gases, Modification of Hydrometer Method of Determining Densities of, M. Meslans, 598
- Gaseous Diffusion, Prof. Herbert McLeod, F.R.S., 104; Improved Apparatus for Exhibiting Phenomena of, Prof. V. Dvorak, 79
- Gaster (F.), a New Classification of Cloud-Forms, 119
- Gastropoda of the Tyrol Tertiary and Triassic, Dr. J. Dreger, 567
- Gautier (Armand), Minervite, a New Natural Phosphate, 119; Formation of Natural Phosphates, 240
- Geikie (Sir Archibald, For. Sec. R.S.), on Structures in Eruptive Bosses which resemble those of Ancient Gneisses, 531; Relationship between Physical Geography and Geology, 554
- Geikie (James, F.R.S.), Fragments of Earth Lore, 385
- Geitel (H.), Comparison of Intensities of Light by the Photo-Electric Method, 91
- Geitler (J. von), the Reflection of Electrical Waves in Wires, 110
- Genese (Prof. R. W.), Grassmann's Ausdehnungslehre, 517
- Genesis of Nova Aurigæ, the, Richard A. Gregory, 6
- Genetic Relations of the Basic Eruptive Rocks of Gran (Christiana Region), on the, Prof. W. C. Brögger, 531
- Genetische System der Chemischen Elemente, Das, W. Preyer, 173
- Geneva, the "Serpent d'Eau" of the Rhône at, H. Faye, 584
- Geodetic Association, International, 596
- Geography: H. O. Forbes' Discoveries in the Chatham Islands, Dr. Alfred R. Wallace, 27; Henry O. Forbes, 74, 126, 174, 370; Prof. A. Newton, F.R.S., 101, 150; Geographical Notes, 40, 62, 82, 112, 135, 159, 233, 301, 327, 356, 380, 425, 448, 548, 574, 601, 623; Berlin Geographical Society, 40; Paris Geographical Society, 40; Conversational Meetings, 327; Journey of Guy Boothby across Australia, 40; the Eastern Desert of Egypt, E. A. Floyer, 40; Explorations in the Karakoram, W. M. Conway, 43; Royal Geographical Society Medallists, 59; Anniversary Meeting, 114; Refusal to admit Ladies as Fellows, 234; Death of W. Cotton Oswell, 62; System of Water Reservoirs for Industrial Purposes in the Alsatian Vosges, 62; Death of Captain Richard Pike, 82; Oil Rivers Protectorate re-named Niger Coast Protectorate, 112; Adoption by Natal of Responsible Government, 112; Return of Antarctic Whaler, *Balena*, 112; Departure of Lieutenant Peary on his Second Arctic Expedition, 234; Norwegian Antarctic Whaling Expedition, 574; the Steam-Whaler *Newport* in the

- Arctic Regions, 574; Ocean Nomenclature, 112; Captain Stair's Katanga Expedition, Dr. Moloney, 135; Mr. H. Y. Oldham appointed to Cambridge Geographical Lectureship, 136; the Site of Edinburgh in Pre-Historic Times, H. M. Cadell, 136; Death of Vita Hassan, 159; Captain Cook's Journal during his First Voyage Round the World, made in H.M. Barque *Endeavour*, 1768-1781, Sir J. D. Hooker, F.R.S., 195; Captain Maunsell's 1892 Kurdistan Journeys, 233; Physical Geography of Clyde Sea Area, Dr. H. R. Mill, 287; the Available Water-Power of Maryland, Prof. Clark, 324; Dr. Nansen's Expedition, 301, 425, 574; Geographical Journal, 301; South-West Africa, Count Pfeil, 301; Asiatic Quarterly Review, 301; the Sinaitic Peninsula, Prof. Sayce, 301; Bathymetrical Survey of the Larger English Lakes, Dr. H. R. Mill, 327; Departure of Mr. F. G. Jackson for Nova Zembla, 327; the Desert Sands of Lower Egypt, A. Andouard, 336; the Alleged Death of Emin Pasha, 356; *Revue de Geographie*, 356; Return of Rev. R. P. Ashe, 356; Geographical Society established at Tunis, 356; Fragments of Earth Lore, James Geikie, F.R.S., 385; Dr. Gregory's Expedition to Lake Baringo, 397; Return of Dr. J. W. Gregory from East Africa, 618; Projected Railway in French Congo, 380; the Kara Sea Route to Northern Siberia, 380; Inaccuracy of French Elementary Text-books, Dr. M. Viguier, 380; Commencement of the Central African Telegraph Line, 380; the Geography of South America, 425; Rectification of Boundary between British and Dutch New Guinea, 426; Opening of Ship-Canal across Isthmus of Corinth, 426; Return of Mr. Selous to Mashonaland, 426; Discovery of Temple on the Limpopo, R. M. W. Swan, 426; Proposed Exploration of Uganda, by Mr. Scott Elliott, 444; the Zoutspanberg Goldfields, Fred. Jeppe, 448; Changes in Coast Line of South-West Schleswig, Dr. R. Hansen, 448; the Hypothesis of Sub-Continental Belts, M. Rateau, 484; Dr. Baumann's Exploration to North-East of Lake Tanganyika, 548; Ascent of Mount Ararat, H. F. B. Lynch, 548; History of the Mapping of Missouri, Arthur Winslow, 548; Opening Address in Section E of the British Association by Mr. Seeborn, 554; Relationship between Physical Geography and Geology, Clements R. Markham, F.R.S., W. Topley, F.R.S., E. G. Ravenstein, Prof. C. Lapworth, F.R.S., Prof. Valentine Ball, Dr. R. D. Roberts, Dr. H. R. Mill, H. Y. Oldham, Prof. Bonney, F.R.S., Sir Archibald Geikie, 554; Cruise of the Dundee Whalers to the Antarctic Regions, W. S. Bruce and C. M. Donald, 555; Experiences in the Bengal Duars, Settlement of Santal Colonists in that Region, E. Heawood, 555; Exploration of Mount Kina Balu, North Borneo, John Whitehead, 564; the Tscheler Haide, R. Schütte, 570; Surface Change—accompanying Earthquakes of 1891 in Japan, Prof. Koto, 574; Festschrift in Celebration of Baron F. de Richthofen's Sixtieth Birthday, 597; Types of Sea-Coasts, Dr. A. Philippon, 597; Currents of Bay of Biscay, A. Hautreux, 601; the Hour-Zone System of Time Reckoning for Australia, 601; Projected Amazon Basin Scientific Expedition, 601; Resurvey of Lake Leopold II. by Mr. Mohun, 601; Cable laid between Queensland and New Caledonia, 623; Determination of Geographical Longitude, Herr C. Runge, 623; Geology: H. O. Forbes' Discoveries in the Chatham Islands, Dr. Alfred R. Wallace, 27; Henry O. Forbes, 74, 126, 174, 370; Prof. A. Newton, F.R.S., 101, 150; Geological Society, 46, 118, 142, 191, 285; Origin of the Crystalline Schists of the Malvern Hills, Dr. Charles Callaway, 46; Volcanic Rocks from Gough's Island, L. V. Pirsson, 70; Fossil in Coal-Balls, H. B. Stocks, 72; Felsites and Conglomerates between Bethesda and Llanillyfni, Prof. J. F. Blake, 118; Llandovery Rocks near Corwen, Philip Lake and T. T. Groom, 118; Notes on Dartmoor, Lieut.-General McMahon, 142; Recent Borings through Lower Cretaceous Strata in East Lincolnshire, A. J. Jukes-Browne, 142; Lignite found in Blue Upper Globigerina Limestone at Malta, N. Tagliaferro, 156; the Shell-Beds of North Scotland, Dugald Bell, 181; Rigidity not to be relied upon in Estimating Earth's Age, Osmond Fisher, 187; the Bajocian of Sherborne District, S. S. Buckman, 191; Raised Beeches and Rolled Stones at High Levels in Jersey, Dr. Andrew Donlop, 191; the Glacier Theory of Alpine Lakes, Graham Officer, 198; Dr. Alfred Russel Wallace, F.R.S., 198; Daubrée on the Geological Work of High-Pressure Gas, 226; the Glacial Nightmare and the Flood: a Second Appeal to Common-sense from the Extravagance of some Recent Geology, Sir Henry H. Howorth, F.R.S., Prof. T. McKenny Hughes, F.R.S., 242; Ice as an Excavator of Lakes and a Transporter of Boulders, Sir Henry H. Howorth, F.R.S., 247; Die Klimate der Geologischen Vergangenheit und ihre Beziehung zur Entwicklungsgeschichte der Sonne, Eug. Dubois, 266; Composite Dykes in Arran, Prof. J. A. Judd, F.R.S., 285; Intrusive Sheet of Diabase near Bassenthwaite, J. Postlethwaite, 286; a New Genus (*Styloseris*) of *Madrepuraria* from Sutton Stone of South Wales, R. F. Tones, 286; Cheilostomatous Bryozoa from Middle Lias, E. A. Walford, 286; an Introduction to the Study of Geology, Edward Aveling, 292; the Norian Rock of Canada, Prof. F. D. Adams, 298; Slickensides, J. Allen Howe, 315; Pot-Stones found near Seaford, Geo. Abbott, 315; Geologists' Association in Ireland, 329; Intrusive Masses of Boulder Clay, Percy F. Kendall, 370; Fragments of Earth Lore, James Geikie, F.R.S., 385; the Bacchus Marsh Boulder Beds, R. D. Oldham, 416; the Cambrian of the Hérault, MM. de Rouville, Delage, and Miguel, 432; an Elementary Handbook, A. J. Jukes-Browne, 435; Palaeozoic Glaciation in the Southern Hemisphere, E. J. Dunn, 458; Chemical and Micro-Mineralogical Researches on Upper Cretaceous Zones of South of England, Dr. W. F. Hume, 482; Geological Survey Map of France, 482; Opening Address in Section C of the British Association, J. J. H. Teall, F.R.S., 486; Geology at the British Association, 531; on the Genetic Relations of the Basic Eruptive Rocks of Gran (Christiana Region), Prof. W. C. Brögger, 511; on the Dissected Volcano of Crandall Basin, Wyoming, Prof. J. P. Iddings, 531; on Structures in Eruptive Bosses which resemble those of Ancient Gneisses, Sir Archibald Geikie, 531; on Berthelot's Principle applied to Magmatic Concentration, A. Harker, 532; on the Igneous Rocks of Barnavava, Carlingford, Prof. W. J. Sollas, 532; on Augen-Structure in Relation to the Origin of Eruptive Rocks and Gneiss, J. G. Goodchild, 532; on the Derbyshire Toadstone, Mr. Arnold-Bemrose, 532; on the Igneous Rocks of South Pembrokeshire, Messrs. Howard and Small, 532; Composition of the Rock of Bramcote and Stapleford Hills, Prof. Clowes, 532; Source of Nottingham Water Supply, Prof. E. Hull, 532; Investigation into the Shell-bearing Clays of Clava in Nairn, Dugald Bell, 532; General Glaciation of Asia, Prince Kropotkin, 533; the Esker Systems of Ireland, Prof. Sollas, 533; Theories as to Origin of the Glacial Period, C. A. Lindvall, 533; Glaciers, Prof. Bonney, 533; Geology of Central East Africa, Walcot Gibson, 533; Geology in Secondary Education, 533; Official Geological Maps of Germany, 523; Relationship between Physical Geography and Geology, Clements R. Markham, F.R.S., W. Topley, F.R.S., E. G. Ravenstein, Prof. C. Lapworth, F.R.S., Prof. Valentine Ball, Dr. R. D. Roberts, Dr. H. R. Mill, H. Y. Oldham, Prof. Bonney, F.R.S., Sir Archibald Geikie, For. Sec. R.S., 554; Geological Survey of Russia, issue of General Map, 570; Geological Society of America, 578; Geological and Solar Climates: their Causes and Variations, Marsden Manson, 588; the Supposed Glaciation of Brazil, Dr. Alfred R. Wallace, F.R.S., 589; Sir Henry H. Howorth, F.R.S., 614; David Wilson Barker, 614; Geological Structure of Japan, Dr. Edmund Naumann, 619; Sandstone near Nottingham, wholly cemented with Crystalline Barium Sulphate, Prof. Frank Clowes, 621; Conditions of Appalachian Faulting, Bailey Willis and C. W. Hayes, 631; Geometry: an Elementary Treatise on Modern Pure Geometry, R. Lachlan, 100; an Elementary Treatise on Pure Geometry, with numerous Examples, J. W. Russell, 101; German Empire, Official Catalogue of the Exhibition of the, at the Columbian Universal Exhibition in Chicago, 176; German Manufacturer, the Appreciation of Science by, Prof. Henry E. Armstrong, F.R.S., 29; German Mathematical Association, 150; Germany, Official Geological Maps of, 523; Germanium found in Canfieldite, Prof. Penfield, 378; Gibbs (Prof. J. Willard), Quaternions and Vector Analysis, 364; Gibson (Walcot), Geology of Central East Africa, 533; Gilberne (A.), Sun, Moon, and Stars, Astronomy for Beginners, 101; Gilbert (G. K.), the Moon's Surface, 82; Gilbert (Dr. Joseph Henry, F.R.S.) Knighted, 375; Gill (Dr.), Observations of the Planet Victoria, 276; Gieseler (Herr), the Protective Function of Oxalic Acid in Plants, 109



- Glacial Period, Origin of the, C. A. Lindvall, 533  
 Glacial Phenomena, the Causes of, Sir Henry H. Howorth, F.R.S., Prof. T. McKenny Hughes, F.R.S., 242  
 Glaciation of Asia, General, Prince Kropotkin, 533  
 Glaciation of Brazil, the Supposed, Dr. Alfred R. Wallace, F.R.S., 589; Sir Henry H. Howorth, F.R.S., 614; David Wilson Barker, 614  
 Glaciation, Palæozoic, in the Southern Hemisphere, E. J. Dunn, 458  
 Glacier-Growth, Solar Heat as an Agent in hindering, Herr Schiotz, 156  
 Glacier Theory of Alpine Lakes, Graham Officer, 198; Dr. Alfred Russel Wallace, F.R.S., 198  
 Glacier, Tête Rousse, Change in, since Saint Gervais Catastrophe, A. Delebecque and L. Duparc, 407  
 Glaciers, Prof. Bonney, 533  
 Glanders, Inoculation for, 273  
 Glass Surfaces, Grinding and Polishing of, Lord Rayleigh, F.R.S., 526  
 Glazebrook (R. T., F.R.S.), Opening Address in Section A of the British Association, 473  
 Glochidia, a Method of Obtaining, G. P. Darnell-Smith, 223  
 Gloves made from Foal Skins, Russian, 79  
 Gneiss, Augen-Structure in Relation to the Origin of Eruptive Rocks and, J. G. Goodchild, 532  
 Gneisses, on Structures in Eruptive Bosses which resemble those of Ancient, Sir Archibald Geikie, For. Sec. R.S., 531  
 Gold in British Guiana, Hope Hunter, 79  
 Gold Bullion Assaying, Limits of Accuracy of, T. K. Rose, 22; the Volatilisation of Gold, T. K. Rose, 22; Dissolution of Gold in Potassium Cyanide Solution, R. C. MacLaurin, 22  
 Gold Fields, the Bendigo, E. J. Dunn, 207  
 Goldscheider (Dr.), the Sense of Touch in the Blind, 48  
 Golf, some Points in the Physics of, Prof. P. G. Tait, 202  
 Good Words, Science in, 351, 444  
 Goodchild (J. G.), Augen-Structure in Relation to the Origin of Eruptive Rocks and Gneiss, 532  
 Goodrich (E. S.), New Organ in Lycoridea, 115  
 Gorham (Dr. John), a Reflecting Kaleidoscope, 159  
 Gotch (Prof.) on Nerve Stimulation, 575  
 Göttingen Royal Society of Sciences, 312, 336, 456  
 Gould (John, F.R.S.), an Analytical Index to the Works of R. Bowdler Sharpe, 100  
 Gran (Christiana Region), on the Genetic Relations of the Basic Eruptive Rocks of, Prof. W. C. Brögger, 531  
 Granophyre of the Carlingford and Morne Mountains, the, Prof. Sollas, F.R.S., 109  
 Grasses of the Pacific Slope, including Alaska and the adjacent Islands, Dr. George Vasey, 411  
 Grassmann's Ausdehnungslehre, Prof. R. W. Genese, 517  
 Gratings, Alternations of Colours presented by, George Meslin, 432  
 Gratings, Aperture Fringes in the Experiment with Parallel, M. Georges Meslin, 608  
 Gratings, Diffraction; Focal Anomalies, A. Cornu, 144  
 Gravitation Effects, on the Velocity of Propagation of, S. Tolver Preston, 103  
 Gravitation on Surface of Globe, Distribution of, M. Defforges, 336, 484; MM Fizeau, Daubrée, Cornu, Basset, and Tisserand, 489  
 Gravity, Experiments for Determining by Weighing Diminution on Ascent from Earth's Surface of, Drs. Richarz and Kriger-Menzel, 155  
 Gravitation, Determinations of, 158  
 Gray (Prof. A.), Original Papers on Dynamo Machinery and allied Subjects, Dr. J. Hopkinson, F.R.S., 244; the Dynamo, C. C. Hawkins and F. Wallis, 244; Magneto-Optic Rotation, 345  
 Great Drought of 1893, the, 295  
 Greece, the Influence of Egypt upon Temple Orientation in, J. Norman Lockyer, F.R.S., 417  
 Greece, the Breaking of Clay Vessels as a Funeral Rite in Modern, Prof. N. G. Politis, 445  
 Greek Temples, the Orientation of, F. C. Penrose, 42  
 Green (Prof. A. H., F.R.S.), A. E. Brehm. Les Merveilles de la Nature, La Terre, les Mers et les Continents; Géographie Physique, Géologie et Minéralogie, Fernand Priem, Prof. A. H. Green, F.R.S., 25  
 Greenhill (Prof. A. G., F.R.S.), Pseudo-Elliptic Integrals and their Dynamical Applications, 188; Hydrostatics and Elementary Hydrokinetics, 457; a Treatise on Analytical Statics, Edward John Routh, F.R.S., 609  
 Greenland, the Flora of, 186  
 Greenwich Observatory, 112; Annual Visitation of the, 127  
 Greenwich, Difference of Longitude between Vienna and, 277  
 Greenwich, the Reported Cholera Outbreak at, 618  
 Gregarinidæ, on Certain, and the Possible Connection of Allied Forms with Tissue Changes in Man, Dr. C. H. Cattle and Dr. J. Millar, 576  
 Gregory (Dr. J. W.), Expedition to Lake Baringo, 397; Return from East Africa of, 618  
 Gregory (Richard A.), the Genesis of Nova Aurigæ, 6; Advanced Physiography, 339  
 Griffiths (A. B.),  $\delta$ -Achromoglobine, a Respiratory Globuline contained in Blood of Certain Mollusca, 119; a Manual of Bacteriology, 219  
 Griffiths (J.), Note on Problem to inscribe in One of Two Triangles a Triangle similar to other, 23  
 Griffiths and Clark (Messrs.), Determination of Low Temperatures by Platinum Thermometers, 155; Heating Effects of Small Current necessary to Measure Resistances, 156  
 Grigg (Richard), the Middlesbrough Salt Industry, 356  
 Grinding and Polishing of Glass Surfaces, Lord Rayleigh, F.R.S., 526  
 Groom (T. T.), Llandovery Rocks near Corwen, 118  
 Grotto, the Boundoulaou, E. A. Martel and Émile Rivière, 231  
 Grove (Mrs. Lilly), Ethnographic Aspect of Dancing, 557  
 Grye (Bouquet de la), Tidal and Atmospheric Waves due to Luni-Solar Influence, 264  
 Guérin (G.), *Traité Pratique d'Analyse Chimique et de Recherches Toxicologiques*, 221  
 Guiana, British, Gold in, Hope Hunter, 79  
 Guiana, British, Meteorology of, for 1891, 620  
 Guignard (M. Léon), Localisation of the Active Principle in Capparidæ, 608  
 Guillemin (Amedée), Death of, 82  
 Gun and Camera in Southern Africa, H. Anderson Bryden, 125  
 Guye (P. A.), Rotatory Power of Bodies belonging to Homologous Series, 216; the Rotatory Power of Quartz at Low Temperatures, 230  
 Gyroscope Top, a New, Newton and Co., 354  
 Haberlandt (Herr), the Transpiration of Tropical Plants, 108  
 Habits of South African Animals, Dr. Alfred Wallace, F.R.S., 390  
 Haddon (Prof. Alfred C.), the Great Barrier Reef of Australia, its Products and Potentialities, W. Saville Kent, 217  
 Haddon (Arthur L.), Compulsory Laws of Error in Drawing, 402, 416  
 Haeder (Herman), a Handbook on the Steam Engine, N. J. Lockyer, 314  
 Hailstones, Peculiar, Kanhaiyalal, 248  
 Hailstones, Remarkable, Dr. H. J. Johnston-Lavis, 294  
 Hailstorm at Murree, Terrific, 229  
 Hailstorm, the Murree, F.C. Constable, 251  
 Haldane (Dr. J. S.), Physico-Chemical and Vitalistic Theories of Life, 574  
 Hale (Dr. William H.), the American Association, 460  
 Haliburton (R. G.), Orientation of Temples by the Pleiades, 565  
 Hall (Mr.), Explosions in Mines, with Special Reference to the Dust Theory, 530  
 Hallwachs (W.), Theory of Change of Properties of Liquids in Proportion to Matter in Solution Invalidated in Case of Density of Dilute Aqueous Solutions, 571  
 Hamilton (A. G.), the New Flora and the Old in Australia, 161  
 Hamilton (Dr. A. Mc.L.), Mental Medicine, 250  
 Hann (Dr. J.), Anemometrical Observations at Vienna, 1873-92, 108  
 Hann (Director J.), Obir Thermograph Records, 251  
 Hannay (J. B.), Metallurgy of Lead, 165  
 Hansen (Dr. R.), Changes in Coast Line of South-west Schleswig, 448  
 Happy Life, some Further Recollections of a, Selected from the Journals of Marianne North, Mrs. John Addington Symonds, 291  
 Harker (A.), Berthelot's Principle applied to Magmatic Concentration, 532  
 Harley (Vaughan), Effects of Injection of Sugar into a Vein, 334  
 Harlow (F. S.), Practical Astronomy, 197



- Harrington (Prof. B. J.), the Beaver Creek Meteorite, 426  
Hart (Ernest), Cholera Nurseries and their Suppression, 322  
Harting (J. E.), the Identity of Shakespeare's Russet-pated Choughs, 445  
Hartley (Prof. W. N., F.R.S.), Spectra of Flame from Bessemer Converter, 64; Oxyhydrogen Blowpipe Spectra, 165  
Hartog (Prof. Marcus), a Difficulty in Weismannism Resolved, 28, 77; on the Digestive Ferments of a Large Protozoon, 575  
Hartog (Philip J.), the Word Eudiometer, 127  
Harveian Oration, the, Dr. P. H. Pye-Smith, F.R.S., 601  
Harvey (William), Tercentenary of the Admission of, to Gonville and Caius College, Cambridge, 199  
Harvie-Brown (J. A.), a Vertebrate Fauna of Argyll and the Inner Hebrides, 123  
Haseemann (A.), Novel Suspension for Pendulums, 399  
Hassan (Vita), Death of, 159  
Hatschek (Dr. B.), the Amphioxus and its Development, 613  
Häussermann (Dr.), Isolation of Crystallised Sodium Salt of Perchromic Acid, 300  
Hautreaux (A.), Currents of Bay of Biscay, 601  
Hawaiian Islands, Observations taken at, Dr. Marcuse, 559  
Haward (Dr. Edwin), Proofs of Death, 156  
Hawk, Soaring of, F. C. Constable, 223  
Hawkins (C. C.), the Dynamo, Prof. A. Gray, 244  
Hawkins (E. M.), Azo-Compounds of Ortho-Series, 262  
Hawksley (Thomas), Death and Obituary Notice of, 522  
Haycraft (Dr. John Berry), Prof. Bütschli's Artificial Amœbæ, 594  
Hayes (C. W.), Conditions of Appalachian Faulting, 631  
Hayes (M. Horace), the Points of the Horse, 364  
Head, the Mad, Dr. Crochley Clapham, 558  
Head (Jeremiah), Recent Developments in Cleveland Iron and Steel Industries, 356; Opening Address in Section G of the British Association, 497  
Headley (F. W.), Carrier Pigeons, 223; Birds' Method of Steering, 293  
Headley (T. C.), Sexual Colouration of Birds, 413  
Health Problems, Public, John F. J. Sykes, 27  
Health: Public Health Laboratory Work, Henry R. Kenwood, 433  
Health, the Soil in Relation to, H. A. Miers and R. Crosskey, 196  
Heat, Mark R. Wright, 315; Animal Heat and Physiological Calorimetry, Prof. Rosenthal, 88; Corrected Formula of Heat necessary to raise a Gramme of Water to  $t^{\circ}$  C., Prof. Bartoli and Staccini, 299; Diathermanous Power of Ebonite for Heat-Waves, Riccardo Arnè, 299; Specific Heat of Glass of Various Compositions, A. Winkelmann, 333; Electric Conveyance of, L. Houlléville, 632; the Great Heat of August 8-18, 395; Drought and Heat at Shirenewton Hall in 1893, E. J. Lowe, F.R.S., 436  
Heaviside (Oliver, F.R.S.), Operators in Physical Mathematics, 284  
Heawood (E.), Experiences in the Bengal Duars, 555  
Hebrides, a Vertebrate Fauna of Argyll and the Inner, J. A. Harvie-Brown and T. E. Buckley, 123  
Hedley (C.), the Range of Placostylus, 38; the Land and Freshwater Mollusca of New Zealand, 182  
Hedley (Dr. W. S.), on M. d'Arsonval's Experiments on Effects of Strong Alternating Magnetic Fields on Animals, 481  
Heen (P. de), Variation of Temperatures of Transformation below and above Critical Temperature, 406  
Heerwagen (F.), Temperature Coefficient of Dielectric Constant of Pure Water, 260  
Hefner-Altenack (F. von), New System of Electric Control of Clocks, 445  
Heilprin (Prof. Angelo), the Arctic Problem and Narrative of the Peary Relief Expedition of the Academy of Natural Sciences of Philadelphia, 434  
Heim (Herr), Resistance of some Micro-Organisms to High Temperatures, 377  
Helff (Herr), the Compounds of Phosphorus and Sulphur, 482  
Heligoland, Biological Institute at, 59  
Heligoland, Biological Station started on, 231  
Hellmann (Prof.), Das älteste Berliner Weiter-Buch, 11  
Helmholtz (Prof. von), the Methods of Speech-production, 407  
Hemisphere, Southern, Palæozoic Glaciation in the, E. J. Dunn, 458  
Henderson (J. B.), Polarisation of Platinum Electrodes in Sulphuric Acid, 310  
Henrici (Prof. O.), Dr. Lodge's Foundation of Dynamics, 166  
Henry (Miss Teuira), Strange Heathen Ceremony at Raiatea, 398  
Henslow (Rev. G.), Effects of Growing Plants under Coloured Glasses, 422  
Heppel (G.), the Use of History in Teaching Mathematics, 16  
Herdmann (Prof. W. A., F.R.S.), Swarms of Amphipods, 28; Whitsuntide Work of Liverpool Marine Biological Committee, 133; Oyster-Culture and Temperature, 267  
Heredity: a Difficulty in Weismannism Resolved, Prof. Marcus Hartog, 28, 77; the Non-Inheritance of Acquired Characters, Dr. C. Herbert Hurst, 368; the Definition of Heredity, T. Spencer Smithson, 413; the All-sufficiency of Natural Selection, Prof. A. Weismann, 443  
Hering's Theory of Colour Vision, C. L. Franklin, 517  
Herrmann (E.), Relations of Daily Synoptic Weather Charts to general Circulation of Atmosphere, 188  
Hertwig (Prof. Richard), Lehrbuch der Zoologie, 173  
Hertz (Dr. Heinrich), Untersuchungen über die Ausbreitung der Electricischen Kraft, 538  
Hewitt (J. T.), Chlorinated Phenylhydrazines, Part II., 94  
Hewitt (T. P.), Watchmaking by Machinery, 556  
Hickson (Dr. S. J.), Early Stages in Development of *Distichopora violacea*, 332  
Hickson (Dr.), Coral Reefs, 575  
Hidden (W. E.), Mackintoshite, 431  
Higgs (George), Geometrical Construction of Oxygen Absorption Lines and Solar Spectrum, 164  
High-Pressure Gas, Daubrée on the Geological Work of, 226  
Hildebrand (Prof. Hans) on Anglo-Saxon Remains and Coeval Relics from Scandinavia, 557  
Himalayas, Abnormal Weather in the, F. C. Constable, 248  
Himmel und Erde, 254, 355  
History, the Use of, in Teaching Mathematics, G. Heppel, 16  
Hitchcock (Romyn), the Ancient Burial Mounds of Japan, 398  
Hobbs (W. H.), a Rose-coloured Lime and Alumina bearing Variety of Talc, 70  
Hodgkins Fund Prizes, Smithsonian Institution, 233; Prof. S. P. Langley, 618  
Hodgkinson (W. R.), a Magnesium Compound of Diphenyl, 22  
Holmes (Dr. Rudolf), Erdbebenkunde: Die Erscheinungen und Ursachen der Erdbeben, die Methoden ihrer Beobachtungen, 363  
Hogg (T. W.), Cyano-Nitride of Titanium, 529  
Holden (Edward S.), the Suicide of Rattlesnakes, 342  
Holder (Charles Frederick), Louis Agassiz, his Life and Work, Prof. T. G. Bonney, F.R.S., 52  
Holland (P. J.), Electrical Conductivity of Copper Chloride Solution, 620  
Holman (Silas W.), Discussion of the Precision of Measurements, 221  
Holmes (W. H.), the American Ice-Age Drift Flints, said to be of Indian Manufacture, 253  
Holz (L.), Generation of Electricity by Small Drops, 607  
Honey, Plane-tree, Edm. Jandrier, 608  
Hongkong, the Cold Wave at, January 1893; its After Effects, Sydney B. J. Skerchly, 3  
Honorary Distinctions, 425  
Hooker (Sir J. D., F.R.S.), Captain Cook's Journal during his First Voyage round the World, made in H.M. Barque *Endeavour*, 1768-1781, 195  
Hopkins (William J.), Telephone Lines and their Properties, Francis G. Baily, 99  
Hopkinson (Dr. J., F.R.S.), Magnetic Viscosity, 165; Original Papers on Dynamo Machinery and Allied Subjects, Prof. A. Gray, 244  
Horizon, Artificial, W. P. Shadbolt, 510  
Horsley (Victor, F.R.S.), Analysis by Electric Stimulation of Motor Region of Cortex Cerebri in *Macacus Sinicus*, 142  
Horse, the Points of the, M. Horace Hayes, 364  
Horses, Sagacity in, William White, 199  
Horsewhip, an Electrical, 181  
Horticulture: Fogs and Horticulture, Prof. F. W. Oliver, 18; Effects of Growing Plants under Coloured Glass, Rev. G. Henslow, 422; Two New Diseases of the Mulberry, G. Boyer and F. Lambert, 432  
Hose (Charles), the Baram District of Borneo, 118  
Houlléville (L.), Electric Conveyance of Heat, 632  
Hour-Zone System of Time-reckoning for Australia, the, 601  
Howard (E. Douglas), Life with Trans-Siberian Savages, 339

- Howard (Mr.), the Igneous Rocks of South Pembrokeshire, 532  
 Howe (J. Allen), Slickensides, 315  
 Howell (E. E.), Beaver Creek Meteorite of May 26, 1893, 351  
 Howell (J.), Ore-treatment and Mining at Broken Hill, New South Wales, 37  
 Howorth (Sir Henry H., F.R.S.), the Glacial Nightmare and the Flood, 242; Ice as an Excavator of Lakes and a Transporter of Boulders, 247; Coral Reefs, 576; the Glaciation of Brazil, 614  
 Habrecht (M.), Trophoblast of *Tupaja Javanica*, 168  
 Huddersfield, Oxy-Oil Process for increasing Illuminating Power of Coal Gas, 599  
 Hudson (W. H.), the Serpent's Tongue, 350; Birds in a Village, 409  
 Hughes (Prof. T. McKenny, F.R.S.), the Glacial Nightmare and the Flood, Sir Henry H. Howorth, F.R.S., 242  
 Hulke (J. W., F.R.S.), the Collected Papers of Sir William Bowman, F.R.S., 26  
 Hull (Prof. E.), Source of Nottingham Water Supply, 532  
 Hulme (E. Wyndham), the Publication of Scientific Papers, 340  
 Human and Comparative Anatomy at Oxford, Prof. E. Ray Lankester, F.R.S., 616  
 Humanitarian, Science in the, 250, 350  
 Humboldt's Story of the Capture of Electric Eels by means of Wild Horses in Caraccas controverted, 324  
 Hume (Dr. W. H.), Chemical and Micro-Mineralogical Researches on Upper Cretaceous Zones of South of England, 482  
 Hunter (Hope), Gold in British Guiana, 79  
 Hurmuzescu (M.), Curious Experiment by, 13  
 Hurricane at Azores, 445  
 Hurricane at Nova Scotia, 398  
 Hurst (Dr. C. Herbert), the Non-Inheritance of Acquired Characters, 368  
 Huxley (Prof.), W. K. Parker, 12  
 Hybrids, the Minute Structure of Plant, Prof. J. Muirhead Macfarlane, 402  
 Hydracids of the Halogens in the Presence of Oxygen, Report of the Committee on the Action of Light on the, 530  
 Hydrazine and its Compounds, Franz Schröder, 483  
 Hydrocyanic Acid in Plants, 96  
 Hydrokinetics, Hydrostatics and Elementary, Geo. M. Minchin, Prof. A. G. Greenhill, F.R.S., 457  
 Hydrokinometer, a Self-Registering, M. Clerc, 264  
 Hydrophobia Statistics for 1892 at the Institut Pasteur, 544  
 Hydrophone, the, Capt. McEvoy, 159  
 Hydrostatics; Negative Hydrostatic Pressure, G. van der Mensbrugghe, 188  
 Hydrostatic Pressure, Negative, G. van der Mensbrugghe, 332  
 Hydrostatics and Elementary Hydrokinetics, Geo. M. Minchin, Prof. A. G. Greenhill, F.R.S., 457  
 Hygiene: Public Health Problems, John F. J. Sykes, 27; Essays on Rural Hygiene, George Vivian Poore, 266  
 Hymenomyeetes, on Nuclear Structures in the, H. Wazer, 576  
 Ice as an Excavator of Lakes and a Transporter of Boulders. Sir Henry H. Howorth, F.R.S., 247  
 Ice, Arctic, the Various Kinds of, G. Pouchet, 251  
 Ice, Norwegian, Bacilli in, 323  
 Ice, Water and, as Agents of Earth Sculpture, James Geikie, F.R.S., 385  
 Ichthyology; the Coloration of the Skins of Fishes, J. T. Cunningham and C. A. MacMunn, 70; the Production of Monstrosities, J. A. Ryder, 252; Electric Fishes, Dr. McKendrick, 543  
 Identification, Francis Galton, F.R.S., 222; Supplementary Chapter to Book on Finger-Prints, 182; Finger-Prints in the Indian Army, Francis Galton, F.R.S., 595  
 Iddings (Prof. J. P.), on the Dissected Volcano of Crandall Basin, Wyoming, 531  
 Igneous Rocks of Barnavave, Carlingford, on the, Prof. W. J. Sollas, 532  
 Igneous Rocks of South Pembrokeshire, Messrs. Howard and Small on the, 532  
 Imitation or "Instinct" by a Male Thrush? E. Boscher, 369  
 Immunity, Artificial, and Typhoid Fever, 211  
 India: Indian Medico-Chirurgical Review, 13; the Manufactures of, Sir Juland Danvers, 37; Cobras attracted by Remains of Dead Cobra, 79; Alleged Phenomenal Rainfall at Dera Doon, 297; Failure of Efforts to Introduce Cultivation of Japanese Paper Mulberry into, 353; Indian Origin of Ancient Amber, the, A. B. Meyer, 422; Indian Survey for 1892, Report of, 510; Finger-Prints in the Indian Army, Francis Galton, F.R.S., 595  
 Indian Ocean, Royal Meteorological Institute of the Netherlands' Atlas of Observations in, 323; Behaviour of Storms of, Dr. G. Schott, 353  
 Indiana, Projected Biological Survey of, 421  
 Inductoscript, Rev. F. J. Smith, 64  
 Industrie Nationale, Société d'Encouragement pour l', Prize Awards, 569  
 Innsbruck Central Station utilised for Investigating Dielectric Constants of Solids, Alternate Current supplied by, Dr. G. Benischke, 378  
 Insect Prevalence during the Summer of 1893, a few Remarks on, Eleanor A. Ormerod, 394  
 Insect Pests, the Hessian Fly in Norway, 618  
 Insects Washed up by the Sea, Numerous, Sophie Kropotkin, 370; Oswald H. Latter, 392  
 Insects Attracted by Solanum, Prof. T. D. A. Cockerell, 438  
 Insects and Flowers, Labintze, Charles Robertson, 619  
 Instinct, Reason *versus*, Charles William Purnell and Dr. Alfred R. Wallace, 73  
 Instinct, Imitation or, by a Male Thrush? E. Boscher, 369  
 Institution of Civil Engineers, 131  
 Institution of Naval Architects, 277  
 Institution of Mechanical Engineers, 356  
 Intelligence of Animals, the, Charles William Purnell and Dr. Alfred R. Wallace, 73  
 Intelligence, the Limits of Animal, Prof. C. L. Morgan, 350  
 Interdependence of Abstract Science and Engineering, the, Dr. William Anderson, F.R.S., 65  
 Interference Bands and their Applications, Lord Rayleigh, F.R.S., 212  
 Interference Bands, Apparatus illustrating Michelson's Method of Obtaining, Edwin Edser, 372  
 Interference and Diffraction Phenomena, Apparatus for Observing and Photographing, W. B. Croft, 526  
 International Time, France and, W. de Nordling, 330  
 International Maritime Congress, 272, 304  
 Intrusive Masses of Boulder Clay, Percy F. Kendall, 370  
 Inventions, New Series of Illustrated Abridgement Classes published by Patent Office, 569  
 Invertebrata, Zoology of the, Arthur O. Shipley, 173  
 Iodine Value of Sunlight in the High Alps, the, Dr. S. Rideal, 529  
 Ireland, Geologists' Association in, 329; the Esker Systems of, Prof. Sollas, 533  
 Irish Petrology, W. W. Watts, 532  
 Irish Sea, Dredging Expeditions in the, 575  
 Iris, the Glucoside of the, F. Tienann and G. de Laire, 560  
 Iron of Ovik (Greenland), Henri Moissan, 167  
 Iron, Magnetic Qualities of, Prof. J. A. Ewing, F.R.S., and Miss Helen G. Klaassen, 335  
 Iron, Desulphurisation of, John Parry, 427  
 Iron, Nitride of, on the Preparation and Properties of, G. J. Fowler, 529  
 Iron and Steel Industries, Recent Developments in Cleveland  
 Jeremiah Head, 356  
 Iron and Steel Institute, 36, 113, 376, 549  
 Irrigation, the Disadvantages of, W. Roe, 110  
 Irving (Dr. A.), Soot-Figures on Ceilings, 29  
 Isolation, the Method of, and the Properties of Fluorine, MM. Moissan and Meslans, 529  
 Italian Stations for Economic Investigation of Plant Diseases, 13  
 Italiana, Bolletino della Società Botanica, 333  
 Italiano, Nuovo Giornale Botanico, 333  
 Italy, Railway Time in, 481; Adoption of Central European Time, 619  
 Jackson (Mr. F. G.), Departure for Nova Zembla, of, 327  
 Jacobs (Dr.), Action of Extracts of Animal Tissues on Number of White Corpuscles, 408  
 James (J. F.), Scientific Alliance of New York, 421  
 Jamieson (M. B.), Ore Treatment and Mining at Broken Hill, New South Wales, 37  
 Jan Mayen, Plankton of Northern Lagoon of, G. Pouchet, 119  
 Jaudrier (Edm.), Plane-Tree Honey, 608

- Janet (T.), Methods for Experiments on Electric Oscillations of Comparatively Long Period, 423
- Japan: Seismology in Japan, Prof. John Perry, F.R.S., 136; Recent Volcanic Eruptions in Fukushima Districts, 179, 398; the Ancient Burial Mounds of Japan, Romyn Hitchcock, 398; the Cause of the Great Japanese Earthquake, 1891, Prof. B. Koto, 398; Surface Changes Accompanying Japanese Earthquake of 1891, Prof. B. Koto, 574; Geological Structure of Japan, Dr. Edmund Naumann, 619
- Jelly-fish of Lake Urumiah, the, P. L. Slater, F.R.S., 294
- Jenkins (Rear-Admiral T. A.), Death and Obituary Notice of, 376
- Jensen (P.), Die Kosmologie der Babylonier, 2
- Jeppe (Fred.), the Zoutspanberg Goldfields, 448
- Johns Hopkins University Circular, 183
- Johnston's Notes on Astronomy, 233
- Johnston-Lavis (Dr. H. J.), Rise of Lava in Crater of Etna, 179; Remarkable Hailstorms, 294
- Joly (Dr. J., F.R.S.), a Method of Detecting the Existence of Variable Stars by Continuous Photometric Observations, 47; the Diffusion Photometer, 269
- Jonas (E.), New Material for High Resistances, 155
- Jones (J. Viriamu), on Standards of Low Electrical Resistance, 528
- Jourdain (S.), Scented Mists of Channel Coasts, 119
- Journal of Royal Agricultural Society of England, 91
- Journal of Botany, 333, 559
- Jowett (H. A. D.), the Aconite Alkaloids, VII.; Modifications of Aconitine Aurichloride, 535
- Jubilee, the Rothamsted, 289, 327
- Judd (J. W.), Composite Dykes in Arran, 285
- Jukes-Browne (A. J.), Recent Borings through Lower Cretaceous Strata in East Lincolnshire, 142; Geology: An Elementary Handbook, 435
- Jupiter, Observation on, M. Lumsden, 158
- Jupiter, the Satellites of, Prof. W. H. Pickering, 81, 209
- Kablukov (Irv.), Heat developed in combination of Bromine with Unsaturated Hydro-Carbons, 119
- Kaleidoscope, a Reflecting, Dr. John Gobam, 159
- Kanhaiyalal, Peculiar Hailstones, 248; an Appeal to Mathematicians, 415
- Kansas, Effect of Cyclone of June 21 in, E. H. S. Bailey, 352
- Karakoram, Explorations in the, W. M. Conway, 43
- Kassner (G.), Manufacture of Oxygen from Air by means of Calcium Plumbate, 446
- Kayser and Runge, Messrs., Method of obtaining Determination of Refractive Index of Atmosphere for every portion of Photographic Spectrum, 60
- Kelvin (Lord, F.R.S.), Illustrations of Molecular Tactics of Crystal, 159; New Electrical Measuring Instruments, 399
- Kendall (Percy F.), Intrusive Masses of Boulder Clay, 370
- Kennard (T. W.), Death of, 481
- Kent (W. Saville), The Great Barrier Reef of Australia; its Products and Potentialities, Prof. Alfred C. Haddon, 217
- Kenwood (Henry R.), Public Health Laboratory Work, 433
- Kew Herbarium, Additions to, 510
- Kew Meteorological Committee Report, 59
- Kew Observatory; Appointment of Mr. Charles Chree as Superintendent, 11
- Kina Balu, Mount, North Borneo Exploration of, John Whitehead, 564
- Kinetic Theory of Gases, the Moon's Atmosphere and the, G. H. Bryan, 526
- Kipping (F. S.), New Haloid Derivatives of Camphor, 118
- Kirby (W. F.), Brief Guide to the Common Butterflies of the United States and Canada, the Life of a Butterfly, Samuel Hubbard Scudder, 338; the Lepidoptera of the British Islands, 585
- Klaassen (Helen G.), Magnetic Qualities of Iron, 335
- Klein (Dr. E., F.R.S.), Bacteria, their Nature and Function, 82
- Knecht (Edmund), a Manual of Dyeing, 170
- Knott (Prof. C. G.), Quaternions and Vectors, 148, 516
- Kobbe (Gustav), Tides of Bay of Fundy, 444
- Koch (Dr.), Method of Detecting Cholera Bacillus in Water, 523
- Kohlrausch (F.), Determination of Electrical Resistances by Means of Alternating Currents, 259; Theory of Change of Properties of Liquids in Proportion to Matter in Solution invalidated in Case of Density of Dilute Aqueous Solutions, 571; Solubility of some Insoluble Bodies in Water determined by Electric Conductivity of Solution, 697
- Köppen (W.), Rainfall Probability in United States, 215
- Kos-el (Prof.), Dulcin, a New Saccharine Substance, 47
- Koto (Prof.), Cause of the Great Japanese Earthquake, 398; Surface Changes accompanying Japanese Earthquake of 1891, 574
- Kremser (Dr.), Notes on Dryness of April, 1893, 120
- Kreutz (Prof. H.), Comet Appearance in the Year 1892, 380
- Krigar-menzel (Dr. Otto), Experiments for Determining by Weighing Diminution of Gravity on Ascent from Earth's Surface, 155; Experiments on Diminution of Weight at Increasing Altitudes, 288; the Motion of Vibrating Strings, 324
- Kropotkin (Prince), General Glaciation of Asia, 533
- Kropotkin (Sophie), Numerous Insects washed up by the Sea, 370; Oswald H. Latter, 392
- Krouschoff (K. D.), Artificial Diamonds obtained by, 207
- Kükenthal (Dr.), Departure of a Zoological Expedition to Molucca, 619
- Kummer (Prof. E. E.), Death of, 107
- Kupelwieser (Paul), the Manufacture of Basic Steel at Witkowitz, 550
- Kurdistan Journeys, 1892, Captain Mounsell's, 233
- Kützing (T. F.), Death and Obituary Notice of, 597
- Laar (J. J. Van), Die Thermodynamik in der Chemie, 220
- Labbe (Alphonse), the Coccidia of Birds, 536
- Laboratories, European, of Marine Biology, 404
- Laboratories, Research, for Women, Prof. A. W. Rücker, F.R.S., 590
- Laboratory, Subtropical Botanical, established at Eustis, Florida, 545
- Laboratory Work, Public Health, Henry R. Kenwood, 433
- Lacaze-Duthiers (M. de), Oyster-Culture in the Roscoff Aquarium, 560
- Lachlan (R.), an Elementary Treatise on Modern Pure Geometry, 100
- Lagoons, on English, P. H. Emerson, 515
- Laire (G. de), the Glucoside of the Iris, 560
- Lake (Philip), Llandovery Rocks, near Corwen, 118
- Lake District, English; Bathymetrical Survey of Larger Lakes, Dr. H. R. Mill, 327
- Lake Urumiah, the Jelly-Fish of, P. L. Slater, F.R.S., 294
- Lake-Dwellings, on the Structure of, Dr. Munro, 558
- Lakes, Ice as an Excavator of, and a Transporter of Boulders, Sir Henry H. Howorth, F.R.S., 247
- Lambert (F.), Two New Diseases of the Mulberry, 432
- Lamp (Prof. E.), Ephemeris of the New Comet, 276; Comet, 1893 (Rordame—Quénisset), 355
- Landel (G.), Influence of Solar Radiation upon Plants, 384
- Landslip in Norway, Disastrous, 78
- Langley (Mr.), Physico-Chemical and Vitalistic Theories of Life, 574
- Langley (J. N., F.R.S.), Arrangement of Sympathetic Nervous System, I., 21
- Langley (Prof. S. P.), Smithsonian Institution: Hodgkins Fund Prizes, 618
- Langlois Screw for Vertical Propulsions, Trial of, M. Mallet, 360
- Lankester (Prof. E. Ray, F.R.S.), Phagocytes of Green Oysters, 75; Lehrbuch der Zoologie, Prof. Richard Hertwig, 173; Zoology of the Invertebrata, Arthur O. Shipley, 173; the Royal Society, 247; Vertebrate Embryology, 265; the Supposed Suicide of Rattlesnakes, 369; Human and Comparative Anatomy at Oxford, 616
- Lapworth (Prof. C., F.R.S.), Relationship between Physical Geography and Geology, 554
- Larden (Walter), Thunderstorm Phenomena on the Matterhorn, 316
- Larmor (J., F.R.S.), Singularity of Optical Wave-Surface, 23
- Laser's Bacillus der Mäuse-Seuche, 323
- Latitude, the Variations of, Sir Robert Ball, 349; Prof. C. L. Doolittle, 451
- Latitude Determination at Bethlehem, 1892-3, Prof. Doolittle, 460
- Lawrence (H. N.), Electricity and Life, 350
- Layard (Miss Nina F.), on the Roots of the *Lemna* and the Reversing of the Fronds in *Lemna Minor*, 575
- Le Chatelier (H.), the Specific Heat of Carbon, 72; the Third Principle of Energetics, 240, 632; Dissociation of Calcium Plumbates, 287

- Le Conte (Prof.), Theories of the Origin of Mountain Ranges, 551
- Lea (M. C.), Nature of certain Solutions, 187; Endothermic Reactions Effected by Mechanical Force, 631
- Lead, Metallurgy of, J. B. Hannay, 165
- Leake's (Arthur), Bequest to Astronomy, 425
- Lectures on Sanitary Law, A. Wynter Blyth, 246
- Ledebur (Prof.), Carbon in Iron, 550
- Leduc (A.), Density of Sulphurous Anhydride, 336
- Lefort (Prof. Léon), Death of, 618
- Lehmann (E. W.), a Photometer, 406
- Leicester, Earthquake at, 351; Brilliant Meteor at 544
- Lemna, on the Roots of, and the Reversing of the Fronds in *Lemna Minor*, Miss Nina F. Layard, 575
- Leopard, a Snow, for the Zoological Gardens, 181
- Lepidoptera: Sex Proportions of Butterfly Production, T. E. Bear, 231; Colours of certain Larvæ largely due to Food-Plant Pigments, E. B. Poulton, F.R.S., 239; Life-History of Bombycine Moths, A. S. Packard, 252; the Stainton Collection, Lord Walsingham, 322; Brief Guide to the Common Butterflies of the United States and Canada, the Life of a Butterfly, S. H. Scudder, W. F. Kirby, 338; the Lepidoptera of the British Islands, Charles G. Barrett, W. F. Kirby, 585; Hybrids between *Cymatophora* *er* and *Cymatophora* *ocularis*, W. H. B. Fletcher, 607; Effects of Temperature in the Pupal Stage on Species of Lepidoptera, F. Merrifield, 607
- Lepinay (Mace de), the Phenomenon of Mirage illustrated, 109
- Less (Dr.), European Barometric Conditions during Drought of March and April, 1893, 120
- Leuchenberg (M. le duc Nicolas de), Observation of an Aurora Borealis, 608
- Levander (F. W.), an Old Device Resuscitated, 416
- Leverett (Frank), on Changes of Drainage in the Rock River Basin in Illinois, 462
- Lewes (Prof. Vivian B.), Spontaneous Combustion, 626
- Lezé (R.), Study of Filtration of Liquids, 216
- Library Association, Annual Meeting, 482
- Liebig, Correspondence of Berzelius and, 561
- Life, Electricity and, H. N. Lawrence, 350
- Life, Physico-Chemical and Vitalistic Theories of, Dr. J. S. Haldane, Mr. Langley, Prof. Cleland, Prof. Burdon Sanderson, 574
- Light: Light and other High Frequency Phenomena, Nikola Tesla, 136; Photographic Study of Sources of Light by means of Carcel Lamp and Electric Arc, M. Crova, 206; the Luminiferous Ether, Sir G. G. Stokes, 306; Absorption of Light by Platinum at Different Temperatures, Dr. G. B. Rizzo, 377; Electrical Action of Light upon Silver and its Haloid Compounds, Col. Waterhouse, 423; Report of the Committee for Investigating the Action of Light upon Dyed Colours, 529; Report of the Committee on the Action of Light on the Hydracids of the Halogens in the Presence of Oxygen, 530; the Expansion of Chlorine and Bromine under the Influence of Light, Dr. Richardson, 530; Cost of Electric Lighting of Trains, 576; Flashing Lights for Marine Purposes, O. T. Olson, 557
- Lightning, a Peculiar Discharge of, William Brew, 370
- Lilienfeld (Dr.), the Relationship of Cell-elements to certain Colouring Matters, 48; Clotting of Blood, 408
- Lilienthal (Otto), New Flying Apparatus, 571
- Lime Salts in Relation to some Physiological Processes in the Plant, Dr. J. Clark, 575
- Limit, Roche's, Prof. G. H. Darwin, F.R.S., 54
- Limpopo, Discovery of Temple on the, R. M. W. Swan, 426
- Limulus, Morphology and Physiology of Brain and Nerve Organs of, Dr. W. Patten, 312
- Lincei, Reale Accademia dei, Election of Fellows, 421
- Lindvall (C. A.), Origin of the Glacial Period, 533
- Linnean Society, 23, 46, 107, 143, 167, 191
- Linnean Society Procedure, 150
- Linnean Society, New South Wales, 287, 406, 584
- Liquid Films, Thickness and Electrical Resistance of Thin, Profs. Reinold and Rücker, 115
- Liquid Films, the Thickness and Electrical Conductivity of Thin, A. W. Reinold, F.R.S., 624
- Liquid Oxygen, Magnetic Properties of, Prof. J. Dewar, F.R.S., 89
- Liquids, Motion of, Studied by Chronophotography, M. Marey, 47
- Liquids, Study of Filtration of, R. Lezé, 216
- Liquids, the Viscosity of, Prof. Maurice Fitzgerald, 45; Prof. Perry, 45
- Liquids in Proportion to Matter in Solution Invalidated in Case of Density of Dilute Aqueous Solutions, Theory of Change of Properties of, F. Kohlrausch and W. Hallwachs, 571
- Literature, Organisation of Scientific, A. B. Basset, F.R.S., F. G. Donnan, 436
- Living (Prof.), Refractive Indices of Liquid Nitrogen and Air, 620
- Liverpool Marine Biological Committee, Dredging Expedition of the, 14
- Liverpool Marine Biological Committee, Whitsuntide Work of, Prof. Herdman, 133
- Lobatchefsky (Nicolas Ivanovitch), Proposed Celebration of the Centenary of the Birth of, 296
- Lockhart (Wm. S.), an Automatic Gem Separator, 557
- Lockyer (J. Norman, F.R.S.) on the Early Temple and Pyramid Builders, 55; the Astronomical History of On and Thebes, 318, 371; the Influence of Egypt upon Temple Orientation in Greece, 417; the Early Asterisms, 438, 518
- Lockyer (N. J.), the Steam Engine: A Treatise on Steam Engines and Boilers, Daniel Kinnear Clark, 51; a Handbook on the Steam Engine, Herman Haeder, 314; British Locomotives, C. J. Bowen Cooke, 586
- Locomotion on Land, 499; Locomotion in Water, 499; Locomotion in Air, 500
- Locomotives, Electrical, a Variable Power Gear for, Mr. Beaumont, 557
- Locomotives, British, N. J. Lockyer, C. J. Bowen Cooke, 586
- Locust Plagues, Col. Swinhoe, 95
- Lodge (Alfred), Vectors and Quaternions, 198
- Lodge (Prof. Oliver, F.R.S.), Physics, Advanced Course, 1; the Fundamental Axioms of Dynamics, 62, 101, 126, 174; the Foundation of Dynamic, 117, 166; the Publication of Physical Papers, 292; on the Connection between the Ether and Matter, 527, 528; Thoughts on the Bifurcation of the Sciences suggested by the Nottingham Meeting of the British Association, 564
- Loeffler's Bacillus Typhi Murium and Mouse Plagues, 323
- Loeffler's Method for Exhibiting in Stained Preparations the Cilia of Micro-Organisms, Modification of, MM. Nicolle and Morax, 399
- Loewenthal (Richard), A Manual of Dyeing, 170
- Loewy (Dr.), Methods of Blood-titration, 288
- Logarithms, the A B C Five-Figure, C. J. Woodward, B.Sc., 564
- Lominsky (Herr), The Vitality of Pathogenic Bacteria in Vegetable Tissues, 445
- London County Council, Science Classes in Connection with the, 383
- London Mathematical Society, 619
- Longitude, Determination of Geographical, Herr C. Runge, 623
- Longitude, Difference of, between, Vienna and Greenwich, 277
- Longman's Magazine, Science in, 350
- Longuine (W.) Heat Developed in Combination of Bromine with Unsaturated Hydro-Carbons, 119
- Louise (M.), Aluminium Chloride Compounds with Benzoyl Chloride and others of the Aromatic Series, 157
- Love (A. E. H.), On the Collapse of Boiler Flues, 95
- Love's (Mr.) Treatise on Elasticity, A. B. Basset, F.R.S., 415, 543
- Lovel (J.), a Dust Whirl or (?) Tornado, 77; a Remarkable Meteor, 567
- Lovett (Edward), the Flint Industry at Brandon, 180
- Lowe (E. J., F.R.S.), Drought and Heat at Shirenewton Hall in 1893, 436
- Lubbock (Sir John, F.R.S.), the Future of Science, 273
- Lucas (F. A.), Birds' Steering Methods, 414
- Luminiferous Ether, the, Sir G. G. Stokes, 306
- Luminous Fountains on a Small Scale, M. Trouvé, 12
- Lumsden (M.), Observation on Jupiter, 158
- Lunar Atmosphere, the, 40; M. Spée, 62
- Lunar Ephemeris for Turin, Solar, and, 548
- Lupeon (Herr von), Thermometer Liquids, 206
- Lustig (Dr. Alexander), Diagnostik der Bakterien des Wassers, 386
- Lydae (F.), Magnetic Viscosity, 165
- Lydekker (R.), Some Recent Restorations of Dinosaurs, 302
- Lynch (H. F. B.), Ascent of Mount Ararat, 548



- Lyons (C. J.), Diurnal Variations of Barometric Pressure, 20  
Lyrae, Changes in the Spectrum of  $\beta$ , 301
- McAlpine (Dr.), Cattle-Poisoning Species of *Homeria* (Cape Tulip) in Victoria, 378  
MacBride (E. W.), *Echinocyamus pusillus*, 369  
McClure's Magazine, Science in, 250  
McEvoy (Capt.), the Hydrophone, 159  
Macfarlane (Prof. Alexander), Vectors *versus* Quaternions, 75, 540  
Macfarlane (Prof. J. Muirhead), the Minute Structure of Plant Hybrids, 402  
Macfarlane (Prof.), on the Electric Strength of Solid, Liquid and Gaseous Dielectrics, 461  
MacGregor (Prof. J. G.), the Fundamental Axioms of Dynamics, 126, 223  
McGuire (J. D.), the Evolution of Working in Stone, 398  
Mach (E. and L.), Photography of Flying Bullets, 353  
Mach (Dr. Ludwig), Optical Tests for Objectives, 16  
Machinery, Original Papers on Dynamo, and Allied Subjects, Dr. J. Hopkinson, F.R.S., Prof. A. Gray, 244  
Machinery, Watchmaking by, T. P. Hewitt, 556  
McKendrick (Dr.), Electric Fishes, 543  
Mackintoshite, W. E. Hidden, 431  
MacLaurin (R. C.), Dissolution of Gold in Potassium Cyanide Solution, 22  
McLeod (Prof. Herbert, F.R.S.), Gaseous Diffusion, 104  
McLouth (C. D.), Clouds of Flies in Michigan, 545  
MacMahon (Lieut.-Gen.), Notes on Dartmoor, 142  
MacMunn (C. A.), the Coloration of the Skins of Fishes, 70  
Macnair (D. S.), Quantitative Method of Separating Iodine from Chlorine and Bromine, 535  
Mad Head, the, Dr. Crochley Clapham, 558  
Madison, Wisconsin, Meeting of the American Association at, 460  
Madison Botanical Congress, 597  
Madras, Statistics for 1891-2 of Cattle Losses in, 424  
Madreporaria from Sutton Stone of South Wales, New Genus (*Styloseria*) of, R. F. Tones, 286  
Madreporaria, Mr. Saville Kent's Collection of Western Australian, 509  
Maey (Eugen), Diffraction of Light at Straight Sharp Edge of Screen, 141  
Magazines, Science in the, 249, 349, 443, 543  
Magdeburg, Chemical and Bacterial Condition of Elbe at, Herr Ohlmüller, 399  
Magmatic Concentration, Berthelot's Principle applied to, A. Harker, 532  
Magnesium, the Organo-Metallic Compounds of, Dr. Fleck, 424  
Magnetism: Magnetic Properties of Bodies at Different Temperatures, P. Curie, 38; Magnetic Curve Tracers, Prof. Ewing, F.R.S., 64; Magnetic Properties of Liquid Oxygen, Prof. J. Dewar, F.R.S., 89; Magnetic Viscosity, J. Hopkinson, F.R.S., E. Wilson, and F. Lydall, 165; Earth's Magnetism in Neighbourhood of Magnetic Rocks, Messrs. Oddone and Franchi, 274; Magnetic Qualities of Iron, Prof. J. A. Ewing, F.R.S., and Miss Helen G. Klaassen, 335; Magneto-Optic Rotation, Prof. Andrew Grey, 345; Effect of Strong Alternating Magnetic Field on Animals, M. D'Arsonval's Experiments, 481; Dr. W. S. Hedley on M. D'Arsonval's work, 481; Magnetic Observations recently made in Russia, M. Verukoff, 512; the Magnetic Elements at Sagasty, General de Tillo, 584; Curious Rotary Effects of Two-Phase Alternating Current Field-Magnet, 598  
Mahlke (A.), Thermostat for Comparison of Standard Thermometers, 155  
Major (C. J. F.), *Megalapidis Madagascariensis*, Extinct Gigantic Lemuroid from Madagascar, 284  
Major and Minor Planets, the Brightness of the, Dr. G. Müller, 15  
Malogoli (R.), Theoretical Investigations on Electrolysis by Alternating Currents, 423  
Mallet (M.), Trial of a Screw for Vertical Propulsion, 360  
Malvern Hills, Origin of Crystalline Schists of, Dr. Charles Callaway, 46  
Mammals of Trinidad, the, O. Thomas, 37  
Mammals, the Succession of Teeth in, Prof. H. F. Osborn, 238  
Mammals of the Upper Cretaceous, Prof. H. F. Osborn on the, 462  
Manila, a New Astronomical Observatory at, 623  
Manometer, a Highly Sensitive, M. Villard, 132  
Mansfield and Cross (Messrs.), Excursion of Diaphragms of Telephones, 156  
Manson (Marsden), Geological and Solar Climates, their Causes and Variations, 588  
Manufactures of India, the, Sir Juland Danvers, 37  
Manufacturers, German, the Appreciation of Science by, Prof. Henry E. Armstrong, F.R.S., 29  
Manx Cats, A. der Mortillet, 108  
Maps of Germany, Official Geological, 523  
Marantonio, the Thrush Fungus, 622  
Marcet (W., F.R.S.), Influence of Exercise on Interchange of Respiratory Gases, 309  
Marchal (Emile), Production of Ammonia in Soil by Microbes, 406  
Marchlewski (L.), Supplementary Notes on Madder Colouring Matters, 263  
Marcuse (Dr.), Observations Taken at Hawaiian Islands, 559  
Marey (M.), Motion of Liquids Studied by Chronophotography, 47; Photography of Animals in Motion, 456  
Marié-Davy (Dr. G. H.), Obituary Notice of, 351  
Marine Biology, the Week's Work of the Plymouth Station, 14, 39, 61, 81, 111, 134, 158, 183, 208, 232, 253, 275, 300, 326, 354, 379, 401, 425, 447, 483, 524, 547, 573, 600, 622; Dredging Expedition of the Liverpool Marine Biological Committee, 14; Animal Phosphorescence, D. Zabolotry, 92; Marine Biological Association, 236; the Port Erin Station, 423; European Laboratories of Marine Biology, 404  
Marine Floras, the Distribution of, George Murray, 257  
Marine Purposes, Flashing Lights for, O. T. Olson, 557  
Maritime Congress, the International, 272, 304  
Markham (Clements R., F.R.S.), on the Relationship between Physical Geography and Geology, 554  
Marlborough College, Report of Natural History Society of, 37  
Mars, South Polar Cap of, Prof. George Comstock, 15  
Marsh (J. E.), Researches on the Terpenes; III., Action of Phosphorous Pentachloride on Camphene, 262  
Marsh (Prof. O. C.), Some Recent Restorations of Dinosaurs, 437  
Marsh Dwellings, on a British Village of, Arthur Bulleid, 558  
Marshall (A. Milnes), Vertebrate Embryology, 265  
Maryland, the Available Water-Power of, Prof. Clark, 324  
Mashonaland, Return of Mr. Selous to, 426  
Mason (O. T.), Preparation of Mono-, Di- and Tri-benzylamine 535  
Mason (Otis T.), New Caledonian Pottery, 543; the Mexican Atlatl or Throwing-Stick, 597  
Massalongo (C.), a New (Bay) Gall Insect, 92  
Mathematics: the Use of History in Teaching Mathematics, G. Heppel, 16; Toroidal Functions, A. B. Basset, F.R.S., 23; Note on Problem to inscribe in one of two Triangles a Triangle similar to the other, J. Griffiths, 23; Singularity of Optical Wave Surface, J. Larmor, F.R.S., 23; a Problem of Conformal Representation, Prof. W. Burnside, 23; Bulletin of New York Mathematical Society, 44, 70, 187, 259, 359; the Potential of an Anchor Ring, F. W. Dyson, 45; Mathematical Society, 22, 95, 188, 619; Vectors *versus* Quaternions, Prof. Alexander Macfarlane, 75, 540; Vectors and Quaternions, Prof. C. G. Knott, 148, 516; Alfred Lodge, 198; Quaternions and Vector Analysis, Prof. J. Willard Gibbs, 364; the Discussion on Quaternions, Sir Roberts Ball, F.R.S., 391; on a theorem for Bicircular Quartics and Cyclides corresponding to Ivory's Theorem for Conics and Conicoids, A. L. Dixon, 95; Supplementary Notes on Complex Prisms formed with the Fifth Root of Unity, Prof. Lloyd Tanner, 95; the Linear Transformations between Two Quadrics, H. Faber, 95; On the Collapse of Boiler Flues, A. E. H. Love, 95; American Journal of Mathematics, 140, 606; Thread Models of Developables Related to Higher Algebraical Equations, M. Schoute, 168; Theory of Functions of a Complex Variable, Dr. A. R. Forsyth, Prof. W. Burnside, F.R.S., 169; Wronski's Expansion, Prof. Echos, 187; Pseudo-Elliptic Integrals and their Dynamical Applications, A. G. Greenhill, F.R.S., 188; a General Property of any Field not admitting of a Potential, M. Vaschy, 192; German Mathematical Association, 150; Operators in Physical Mathematics, Part II., Oliver Heaviside, F.R.S., 284; Proposed Celebration of the Centenary of the Birth of Nicolas Ivanovitch Lobat-

- chelsky, 296; a Graphical Representation of the Twenty-seven Lines on a Cubic Surface, H. M. Taylor, 310; Proceedings of the Edinburgh Mathematical Society, 340; Instruments for Trisecting Angles, Dr. Eckhardt, 353; Death and Obituary Notice of Prof. G. W. Coakley, 398; Mathématiques et Mathématiciens, Pensées et Curiosités, A. Rebière, 410; an Appeal to Mathematicians, Kanhaiyalal, 415; Hydrostatics and Elementary Hydrokinetics, Geo. M. Minchin, Prof. A. G. Greenhill, F.R.S., 457; Opening Address in Section A of the British Association by R. T. Glazebrook, F.R.S., 473; Grassmann's Ausdehnungslehre, Prof. R. W. Genese, 517; Differential Calculus for Beginners, Joseph Edwards, 539; the A B C Five-Figure Logarithms, C. T. Woodward, 564; Pillow Problems, Charles L. Dodgson, M.A., 564; Enunciations in Arithmetic, Algebra, Euclid, and Trigonometry, P. A. Thomas, 564; Asymmetrical Frequency Curves, Prof. Karl Pearson, 615; the Deutsche Mathematik-Vereinigung Exhibition at Munich, 619
- Matsuda (Sachisa), the Anatomy of Magnoliaceae, 482
- Matterhorn, Thunderstorm Phenomena on the, Walter Larden, 316
- Maunsell's (Capt.), Kurdistan Journeys, 1892, 233
- Maxwell's Theorie der Electricität und des Lichtes, Vorlesung über, Dr. Ludwig Boltzmann, 435
- Mayer (A. M.), the True Origin of Contrast Colours, 274; Photometer for Measuring Intensities of Lights of Different Colours, 309
- Maze (M. C.), Drought Cycles, 482
- Mazella (E.), Determination of Wind-Force during Gusts of Bora Storm, 91; Temperature-Waves at Trieste, 871-90, 297
- Mean Density of the Earth, the, Prof. J. H. Poynting, F.R.S., 370
- Measurements, Discussion of the Precision of, Silas W. Holman, 221
- Measures, Metric in Russia, Prof. Petrushevskiy's System, 298
- Mechanics: Simplification of Formulae Depending on Resisting Power of Solids by introducing Greatest Linear Extension  $\Delta$  Supportable by Material, in place of Corresponding Elastic Force  $R_0$ , J. Boussinesq, 216; Displacement of Rigid Body in Space by Rotation, J. J. Walker, F.R.S., 311; a Correction, 317; Institute of Mechanical Engineers, 356; Novel Suspension for Pendulums, A. Hasemann, 399; Hydrostatics and Elementary Hydrokinetics, Geo. M. Minchin, Prof. A. G. Greenhill, F.R.S., 457; Mechanics at the British Association, 556; Opening Address in Section G of the British Association by Jeremiah Head, President of the Section, 497; Mechanism in Nature, 497; Bodily Powers of Man and other Animals, 498; Locomotion on Land, in Water, and in Air, 499; Weight of Birds in Relation to their Bulk, 501; Aerial Navigation, 502; Eventual Exhaustion of Fuel Supply, 503; Automatic Balance of Reciprocating Mechanism, Mr. Beaumont, 556; Warming and Ventilating, Frank Ashwell, 556; Watchmaking by Machinery, T. P. Hewitt, 556; Pneumatic Caulking and Chipping Tool, Mr. Ross, 556; Relative Cost of Conductors with Different Systems of Electrical Power Transmission, 556; on Water Power as a Source of Electricity, A. B. Snell, 557; a Variable Power Gear for Electrical Locomotives, Mr. Beaumont, 557; Flashing Lights for Marine Purposes, O. T. Olson, 557; an Automatic Gem Separator, William S. Lockhart, 557; the Wickstead Testing Machine, Prof. Robinson, 557; the Mechanics of Architecture, E. Wyndham Tarn, 515; a Treatise on Analytical Statics, Edward John Routh, F.R.S., Prof. A. G. Greenhill, F.R.S., 609
- Medical Association, British, 322
- Medical Biology, 29
- Medical Biology, Conjoint Boards, Walter E. Collinge, 75
- Medical Literature, the American Catalogue of, Dr. A. T. Myers, 611
- Medicine, Mental, Dr. A. McL. Hamilton, 250
- Mediterranean Water, Density and Alkalinity of, J. G. Buchanan, 168
- Medley (Mr.), Photometry, 190
- Megalapides Madagascariensis*, Extinct, Gigantic Lemuroid from Madagascar, C. J. F. Major, 284
- Megamicros, a Sensible Effect of Proportional Reduction of Dimensions of Universe, J. Delboeuf, 406
- Megamicros, S. Tolver Preston, 517
- Megascops, the Evolution of Colour in the Genus, 559
- Melbourne University, the Decreased Grant to, 228
- Meldola (R.), Note on a Meta-azo-compound, 118
- Meldola (Prof. R., F.R.S.), Azo-compounds and Orho-series, 262; a Manual of Dyeing, Edmund Knecht, Christopher Rawson, and Richard Loewenthal, 170
- Mély (F. de), Schist-impregnated Peat-moss Treatment of Phylloxera, 512
- Memphramagog, Lake, A. T. Drummond, 12
- Men, on the Earliest, Dr. Brinton, 460
- Mensbrughe (G. van de), Negative Hydrostatic Pressure, 188, 332
- Mental Medicine, Dr. A. McL. Hamilton, 250
- Mercury Pump, a Periodic, Rev. Frederick J. Smith, 320
- Mergier (M.), Instrument for Measuring Electrical Resistance of Human Body, 352
- Meridian Circle Observations, 39
- Merrifield (F.), Effects of Temperature in the Pupal Stage on Species of Lepidoptera, 607
- Meslin (George) Alternations of Colours presented by Gratings, 432; Aperture Fringes in the Experiment with Parallel Gratings, 608; the Method of Isolation and the Properties of Fluorine, 529; Modification of Hydrometer Method of determining Densities of Gases, 598
- Me-nard (Eugène), Apparatus for Measuring Intensity of Per-fumes, 216
- Metallurgy: Basic Steel, English and Foreign, E. W. Richards, 113; the Manufacture of Basic Steel at Witkowitz, Paul Kupelwieser, 550; the Elimination of Sulphur from Iron and Steel, J. E. Stead and E. H. Saniter, 113; Desulphurisation of Iron, John Parry, 427; the Recording Pyrometer, Prof. Roberts-Austen, 114; Researches with the Electric Furnace, M. Moissan, 134; Metallurgy of Lead, J. B. Hannay, 165; Recent Developments in Cleveland Iron and Steel Industries, Jeremiah Head, 356; Carbon in Iron, Prof. Ledebur, 550; Suggested Improvements in Manufacture of Steel Plates, William Muirhead, 550; the Sampling of Iron Ore, T. Clarkson, 551
- Meteorology: a Remarkable Rainfall, Clement L. Wragge, 3; the Greatest Rainfall in Twenty-four Hours, E. Douglas Archibald, 77, 17; J. S. Gamble, 459; Meteorological Council's Summary of Rainfall and Temperature 1866-1893, 59; Rainfall Observations for 1891, 297; Alleged Phenomenal Rainfall at Dera Doon, 297; Rainfall Probability in United States, W. Koppen, 215; Normal Distribution of Rainfall in Madras Presidency, C. Benson, 230; on Secular Variations of our Rainfall, 367; Analysis of Causes of Rain-fall, Prof. G. E. Curtis, 631; the Cold Wave at Hong Kong, January, 1893, its After Effects, Sydney B. J. Skeritch, 3; the Weather Week by Week, 11, 36, 59, 78, 108, 131, 154, 179, 205, 251, 273, 323, 352, 376, 522, 570; Fall of Snow-balls in Saxony, Dr. Paul Schreiber, 11; Das älteste Berliner Wetter-Büch, Prof. Hellmann, 11; the Eiffel Tower Experiments, Variation with Height of the Meteorological Elements, M. Angot, 12; the Spirit Thermometer, M. Chap-puis, 12; Lake Memphramagog, A. S. Drummond, 12; American Meteorological Journal, 20, 140, 239, 583, 631; Ice Columns in Gravelly Soil, Prof. C. Abbe, 20; Diurnal Variations of Barometric Pressure, C. J. Lyons, 20; the Chinook Wind, H. W. Ballou, 21; Afterglows in Spain, Prof. Augusto Arcimis, 29; Prevalence of Violent Storms in Province of Roussillon, Dr. Pines, 36; Kew Committee Report, 59; Atmospheric Phenomenon in the North China Sea, Capt. Chas. J. Norcock, 76; Prize Offered by Hon. Ralph Abercromby for Study of "Southernly Buster," 77; Disastrous Landslip in Norway, 78; Meteorologische Zeitschrift, 91, 188, 215, 284, 259; Iridescent Clouds, H. Mohn, 91; Determination of Wind Force during Gusts of Bora Storm, E. Mazelle, 71; Modern Meteorology, Frank Waldo, William E. Plummer, 97; Anemometrical Observations at Vienna, 1873-1892, D. J. Hann, 108; The Climate of Turin, Dr. Rizzo, 108; Royal Meteorological Society 119, 239; Berlin Meteorological Society, 120; a New Classification of Cloud Forms, F. Gaster, 119; Scattered Mists of Channel Coasts, S. Jourdain, 119; Barometric Conditions over Europe during Drought of March-April, 1893, Dr. Less, 120; Notes on Dryness of April, 1893, Dr. Kiemsner, 120; the Great Heat of August 8 to 18, 395; Drought and Heat at Shirenewton Hall in 1893, E. J. Lowe, F.R.S., 436; Spring and Autumn of 1893, Right Hon. Sir Edward Fry, F.R.S., 509; Sécheresse 1893, ses Causes, l'Abbé A. Fortin, 587; the Summer of 1893, J. Lloyd Bosward, 614; 1890 Observations in Adelaide, 132; Peculiar Rain-b at Aboyne, 132; London Mean Temperatures, 1763-1892, Dr. A. Buchan, 155;

- Thermostat for Comparison of Standard Thermometers, A. Mahlie, 155; Determination of Low Temperatures by Platinum Thermometers, Messrs. Griffiths and Clark, 155; the Corry "Protected" Aneroid, Edward Whymper, 160; Physics of Atmosphere, Prof. von Begold, 140, 239; Charts of Storm Frequency, Prof. Abbe, 140; Six- and Seven-Day Weather Periodicities H. H. Clayton, 140; the Big and Little Monsoons of Ceylon, E. Douglas Archibald, 175; Pubblicazioni of Vatican Observatory, 180; Hypotheses of Oscillations of Maximum Zone of Aurora, A. Paulsen, 188; Relations of Daily Synoptic Weather Charts to General Circulation of Atmosphere, E. Herrmann, 188; Cyclone at Williamstown, 205; the Standing-still Phenomenon of the Motala River (Sweden), 206; the Dynamics of the Atmosphere, M. Möller, 215; Remarkable Oscillations of Temperature at St. Petersburg, February 11, 1893, A. Schoenrock, 229; Terrific Hailstorm at Murree, 229; the Murree Hailstorm, F. C. Constable, 251; Solar Spots and Terrestrial Anticyclones, A. Searle, 239; New Series of Isanomalous Temperature Charts, S. F. Batchelder, 239; Proposed Subjects for Correlated Study by State Weather Services, W. M. Davis, 239; Fogs in British Islands, 1876-90, R. H. Scott, F.R.S., 239; Upper Air Currents over Arabian Sea, W. L. Dallas, 239; Abnormal Weather in the Himalayas, F. C. Constable, 248; Violent Thunderstorms on Ben Nevis, 251; Obir Thermograph Records, Director J. Hann, 251; Hygroscopic Plants, 9; Falkenhorst, 253; Tidal and Atmospheric Waves due to Lunisolar Influence, Bouquet de la Grye, 264; Die Klimate der Geologischen Vergangenheit und ihre Beziehung zur Entwicklungsgeschichte der Sonne, Eug. Dubois, 266; Floods and Landslips in Tyrol, 273; Climatic Effect of Forests upon Neighbourhood, E. Ebermayer, 284; Earth-Temperature at Hamburg, 1886-91, W. J. van Bebbia, 284; Temperature Waves at Trieste, 1871-1890, Ed. Mazelle, 297; Thunderstorm-Phenomena on the Matterhorn, Walter Laiden, 316; Destructive Cloud-Burst in Colorado, 321; Sandstorm in Pomerania, 322; Royal Meteorological Institute of Netherlands, Atlas of Observations in Indian Ocean, Part II., 323; the General Motions of the Atmosphere, W. L. Dallas, 341; Disastrous Cloud-Burst in Middle Styria, 351; Shower of Ants and Flies in Cambridgeshire, 351; the Perennial Spring Climate of Quito, Dr. J. Hann, 352; Meteorological Society established at Zi-ka-Wei, near Shanghai, 352; Effects of Cyclone of June 21 in Kansas, E. H. S. Bailey, 352; Four Simultaneous Waterspouts at Antibes, M. Naudin, 360; Disastrous Floods in Austria, 376; Typhoons of China Sea, Dr. W. Doberck, 376; Report of United States Weather Bureau for 1892, 377; Katechismus der Meteorologie, Prof. Dr. W. J. van Bebbia, 387; Wetterbüchlein, Leonhard Reyman, 389; Hurricane in Nova Scotia, 398; Disastrous Cyclone at Savannah, 421; Cyclone on New York Coast, 421; Observations for 1892, Bremen, Dr. P. Bergholz, 422; the Climate of Eastern Tasmania, Rev. G. R. M. Wilson, 424; the Meteorological Observatory on Ben Nevis, 428; the American Cyclone of August 28 and 29, 444; Hurricane at Azores, 445; Deutsche Seewarte Report for 1892, 445; Drought Cycles, M. C. Maze, 482; Rain-Making Experiments at Danlin, 522; the Bokhara Typhoon of October, 1892, Rev. S. Chevalier, 522; the Mont Blanc Observatory, 522; Oscillations of Lightning Discharges and Aurora Borealis, 535; Weather Forecasts, R. H. Scott, 543; the Three Indian Cyclones of November, 1891, M. Eliot, 545; Behaviour of Storms of Indian Ocean, Dr. G. Schott, 597; Fluctuations in Latitude of Storm-Tracks, Dr. M. A. Veeder, 598; Observations taken at Hawaiian Islands, Dr. Marcuse, 559; Cyclone in Gulf of Mexico, 569; Turin Osservazione, 570; Chicago Meteorological Congress, 570; Movements of Air in Cyclones and Anticyclones, 583; Certain Climatic Features of the Two Dakotas, Lieut. L. P. Finley, 599; Symons's Monthly Meteorological Magazine, 607; Climatological Table for British Empire, 1892, 607; Observation of an Aurora Borealis, M. Le duc Nicolas de Leuchtenberg, 608; Meteorology of British Guiana for 1891, 620; Meteorological Station at Charchani, Peru, Highest in the World, A. L. Rotch, 631
- Meteors: Meteor, a, 425; the April Meteors, W. F. Denning, 5; Meteor Showers, 15, 254, 326; Daylight Meteor, March 18, J. Edmund Clark, 54; Meteor Observations, W. F. Denning, 135; an Ascending Meteor, Prof. von Niessl, 209; Shooting Stars of August, 1893, P. F. Denza, 535; Brilliant Meteor at Leicester, 544; a Remarkable Meteor, J. Lloyd Bozward, J. Lovel, 567; the August Meteors, 600, W. F. Denning, 374
- Meteorite of May 26, 1893, Beaver Creek, E. E. Howell, 351; Prof. B. J. Harrington, 426
- Metric Measures in Russia, Prof. Petrushevskiy's System, 298
- Mexican Atlatl or Throwing-Stick, O. T. Mason, 597
- Mexican Calendar System, Dr. Brinton on the, 462
- Mexico, Cyclone in Gulf of, 569
- Meyer (A. B.), Indian Origin of Ancient Amber, 422
- Meyer (Prof. Victor), the Action of Heat and Light on Hydriodic Acid Gas, 111
- Meyer's Conversational Lexicon, 623
- Meyerhoffer (W.), the Third Principle of Energetics, 456; the Decomposition of Energy into Two Factors, 523
- Michael (A. D.), the Digestive Processes in the Acarina, 71
- Michaelis (Prof.), the Thionylamines, 14; a Method of Preparing Nitrites in a State of Purity, 39
- Michelson's (Prof.) Method of Producing Interference Bands, Edwin Edser, 159, 372
- Michie (P. S.), Practical Astronomy, 197
- Michigan, Clouds of Flies in, C. D. McLouth, 545
- Micro-Organisms, Disinfectants and, 161
- Micronesia, the Gilbert Islands, Dr. O. Finsch, 92
- Micro-copy: the Digestive Processes in the Acarina, A. D. Michael, 71; New Species of Nais, W. B. Benham, 115; New Organ in Lycoridea, E. S. Goodrich, 115; Nephridia of Decapod Crustacea, E. J. Allen, 115; Quarterly Journal of Microscopical Science, 115, 332; Royal Microscopical Society, 71, 167, 286; Modern Microscopy, M. J. Cross, Martin J. Cole, Dr. W. H. Dallinger, F.R.S., 246; Selenite in Utah, Dr. Talmage, 286; Morphology and Physiology of Brain and Sense Organ of Limulus, Dr. W. Patten, 332; the Pervisceral Cavity in Ciona, A. H. L. Newstead, 332; Early Stages in Development of Distichopora Violacea, Dr. S. J. Hickson, 312; Microscopical Investigations on Development and Function of Mammary Gland, Dr. Benda, 408; an Introduction to the Study of the Diatomaceae, Frederick Wm. Mills, 537; Strauss's Method of Colouring Cilia of Living Micro-Organisms, 621
- Middlesborough Salt Industry, the, Richard Grigg, 356
- Miers (H. A.), Instruments for Study of Crystals, 63; the Soil in Relation to Health, 196; Spangolite, a Remarkable Cornish Mineral, 426
- Miguel (M.), the Cambrian of the Heranet, 432
- Milky Way, Photographs of the, Prof. E. E. Barnard, 277
- Mill (Dr. Hugh Robert), Soot-Figures on Ceilings, 29; Physical Geography of Clyde Sea Area, 287; Bathymetrical Survey of Large English Lakes, 327; Relationship between Physical Geography and Geology, 554
- Millar (Dr. J.), on Certain Gregarinidae and the Possible Connection of Allied Forms with Tissue Changes in Man, 576
- Mills (Frederick Wm.), an Introduction to the Study of the Diatomaceae, 537
- Milton (G. T.), Water-Tube Boilers, 278
- Mimicry in Insects, Examples of, 160
- Minakata (Kumagusu), the Constellations of the Far East, 541; Early Chinese Observations on Colour Adaptations, 567
- Minchin (Prof.), Dr. Lodge's Foundation of Dynamics, 166
- Minchin (Geo. M.), Hydrostatics and Elementary Hydrokinetics, 457
- Mineralogy: a New Variety of Amber, "Burmite," Dr. Noetling, 13; the Amber and Jade Mines of Upper Burma, Dr. Noetling, 13; Rose-coloured Lime- and Alumina-bearing Variety of Talc, W. H. Hobbs, 70; Spene Discovered by Prof. David in Bathurst (New South Wales) Granite, 78; the Granophyre of the Carlingford and Morne Mountains, Prof. Sollas, F.R.S., 109; Minervite, a New Natural Phosphate, Armand Gautier, 119; Ovivak (Greenland) Iron, Henri Moisan, 167; New Method of Determining Comparative Hardness of Substances, August Rosinal, 180; Formation of Natural Phosphates, Armand Gautier, 240; Selenite in Utah, Dr. Talmage, 286; the Williams Collection of Minerals, L. Fletcher, F.R.S., 357; Germanium found in Canfieldite, Prof. Penfield, 378; Analysis of Canfieldite, Prof. Penfield, 378; Spangolite, a Remarkable Cornish Mineral, H. A. Miers, 426; Mackintoshite, W. E. Hidden, 431
- Mines, Explosions in, with Special Reference to the Dust



- Theory, Prof. H. B. Dixon, Mr. Hall, Mr. Galloway, Prof. Thorpe, Mr. Stokes, 530
- Mining: Ore-Treatment at Broken Hill, New South Wales, M. B. Jamieson and J. Howell, 37
- Minnesota, Inland Biological Station established at Gall Lake, 324
- Minor Planets, the Brightness of the Major and, Dr. G. Müller, 15
- Mirage, the Phenomenon of, Illustrated, MM. de Lepinay and Perot, 109
- Missouri, History of the Mapping of, Arthur Winslow, 548
- Mivart (St. George), Types of Animal Life, 148
- Modern Meteorology, Frank Waldo, William E. Plummer, 97
- Modern Mycology, Prof. H. Marshall Ward, F.R.S., 224
- Mohn (H.), Iridescent Cloud, 91
- Mohun (Mr.), Resurvey of Lake Leopold II. by, 601
- Moissan (M. Henri) on the Quantitative Determination of Boron, 96; Preparation of Metallic Tungsten, Molybdenum and Vanadium, 134; Researches with the Electric Furnace, 134; Volatilisation of Metals, &c., in the Electric Furnace, 207; Electric Furnace, Crystallised Silicide of Carbon obtained with, 572, 573; Iron of Ovisak (Greenland), 167; the Method of Isolation and the Properties of Fluorine, 529
- Molecular Force, Formula for Law of, M. van der Waals, 168
- Molesworth (Sir Guilford L.) and Robert Bridges Molesworth, Pocket-Book of Useful Formulæ and Memoranda for Civil and Mechanical Engineers, 610
- Möller (M.), the Dynamics of the Atmosphere, 215
- Mollusca; the Range of Placostylus, C. Hedley, 38
- Mollusca of New Zealand, the Land and Freshwater, C. Hedley and H. Suter, 182
- Moloney (Dr.), Captain Stairs' Katanga Expedition, 135
- Moluccas, Departure of Dr. Kükenhol on Zoological Expedition to, 619
- Monsoons of Ceylon, the Big and Little, E. Douglas Archibald, 175
- Mont Blanc Observatory, the, 522, 549
- Month and Year, a Simple Rule for Finding the Day of the Week corresponding to any given Day of the, Dr. C. Braun, 222
- Monthly Packet, Science in, 351
- Monti (Dr.), Discrepancies in Values obtained for Difference of Potential required to pierce Paraffin Slab, 620
- Moon's Atmosphere, the, and the Kinetic Theory of Gases, G. H. Bryan, 526
- Moon's Surface, the, G. K. Gilbert, 82
- Morax (M.), Modification of Loeffler's Method for Exhibiting Cilia of Micro-organisms in Stained Preparations, 399
- Mortology; the Thrush Fungus, Marantonio, 622; Artificial Immunity and Typhoid Fever, 211
- More (C. J.), Wreck-Raising in the Thames, 78
- Morgan (Prof. C. Lloyd), the Origin and Development of Music, Richard Wallaschek, 290; the Limits of Animal Intelligence, 350
- Morley Interferential Comparator, Prof. Wm. A. Rogers on the, 461
- Morley's (Prof.) Final Determination of the Atomic Weight of Oxygen, 461
- Morphology of the Vertebrate Ear, Howard Ayers, 184
- Morris (G. H.), Chemistry and Physiology of Foliage Leaves, 94
- Morse (C. H.), Water-Pipes damaged by Electrolytic Action of Return Current from Electric Railway, 181
- Mortillet (A. de), Manx Cats, 108
- Moscow, Bulletin de la Société des Naturalistes de, 91, 188, 583
- Motala River (Sweden), the Standing Still Phenomenon of the, 206
- Moths, Life-History of Bombycine, A. S. Packard, 252
- Mott (F. T.), on the Origin of Organic Colour, 575
- Mount Kina Balu, North Borneo, Exploration of, John Whitehead, 564
- Mountain Ranges, Theories of the Origin of, Prof. Le Conte, 551
- Mountaineering, the Climbing of High Mountains, W. M. Conway, 443
- Muirhead (William), Suggested Improvements in Manufacture of Steel Plates, 550
- Mulberry, Two New Diseases of the, G. Boyer and F. Lambert, 432
- Müller (Dr. G.), the Brightness of the Major and Minor Planets, 15; the Greatest Brilliancy of Venus, 61
- Müller (Prof. Max), Jubilee of Doctorate of, 481
- Multiplication, Simplified, Lieut.-Colonel Allan Cunningham, 316
- Munich, the Deutsche Mathematiker-Vereinigung Exhibition at, 619
- Munro (Dr. Robert), Opening Address in Section H of the British Association, 503; on the Structure of Lake-Dwellings, 558
- Muntz (A.), Vine-leaves as Cattle Food, 168
- Mur Valley, Earthquake at, 351
- Murray (George), the Distribution of Marine Floras, 257
- Murree, Terrible Hailstorm at, 229; F. C. Constable, 251
- Museum, South African, Report of, 207
- Museum, Australian, Annual Report for 1892, 621
- Museums Association, Sir William H. Flower, F.R.S., 234, 254
- Mushrooms, Emulsine-like Ferment in, Em. Bourquelot, 512
- Music, Primitive, Richard Wallaschek, Prof. C. Lloyd Morgan, 290
- Muthmann (Dr.), Well-crystallised Potassium and Ammonium Selenium Bromides obtained by, 80
- Mycology: Vergleichende Morphologie der Pilze, Dr. F. von Travel, Prof. H. Marshall Ward, F.R.S., 224; the Fungus Gardens of Certain South American Ants, John C. Willis, 392
- Myers (Dr. A. T.), Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army, 611
- Myophone, the, M. d'Arsonval, 399
- Nägeli (Prof. Carl V.), Oligodynamic Phenomena of Living Cells, 331
- Nalder (F. H.), Bridge and Commutator for Comparing Electrical Resistances, 263; Apparatus for Comparing nearly Equal Resistances, 528
- Nansen's North Pole Expedition, 205, 301, 425, 574
- Naples, Publications of the Zoological Station at, Prof. Anton Dohrn, 440
- Nardoo (*Marsilea Drummondii*), the Habit and Use of, T. L. Bancroft, 407
- Natal, Adoption of Responsible Government by, 112
- National Review, 350
- Natural History: the Selborne Society, 36; Natural History Society of Marlborough College, Report of, 37; Bulletin de la Société des Naturalistes de Moscou, 91, 188; Zapiski (Memoirs) of Novorossian (Odessa) Society of Naturalists, 92; Annalen des K. K. Naturhistorischen Hofmuseums, 92; Proposed Monument to Gilbert White, 131; the Metallic-looking Deposit on Teeth of Ruminating Animals, Herr Ascherson, 231; Crocodile's Egg with Solid Shell, J. Battersby, 248; the Life of a Butterfly, Samuel Hubbard Scudder, W. F. Kirby, 338; Habits of South African Animals, Dr. Alfred Wallace, F.R.S., 390; Transactions of Norfolk and Norwich Naturalists' Society, 621.
- Natural Science, the Elements of, Dr. H. Wettstein, 612
- Nature, Mechanisms in, Jeremiah Head, 497
- Naudin (M.), Four Simultaneous Water-Spouts at Antibes, 360
- Naumann (Dr. Edmund), Geological Structure of Japan, 619
- Naval Architecture of Northern Europe, Pre-Historic, G. H. Boehmer, 274
- Naval Architects, Institution of, 277
- Nebulæ, Observations of, Dr. Rudolf Spitaler, 184
- Neolithic Implements; the Evolution of Working in Stone, J. D. McGuire, 398
- Nerve Stimulation, Prof. Gotch, 575
- Nest, a Wasps', 437
- Neurokeratin, Dr. L. Ognoff, 188
- New Caledonian Pottery, Otis T. Mason, 543
- New Conclusions, Graham Officer, Lewis Ballfour, 342
- New Guinea, Rectification of Frontier between British and Dutch, 426
- New Review, Science in the, 249, 350, 543
- New South Wales: New South Wales Linnean Society, 287, 584; Ore-Treatment and Mining at Broken Hill, M. B. Jamieson and J. Howell, 37; Royal Society of New South Wales, 36, 287, 335, 536; Sphene Discovered in Bathurst Granite by Prof. David, 78
- New York Mathematical Society, Bulletin of, 44, 70, 187, 259, 359, 421
- New York, Scientific Alliance of, J. G. James, 421
- New Zealand, the Land and Freshwater Mollusca of, C. Hedley and H. Suter, 182

- Newall (H. B.), Astronomical Photography, 517  
Newall Telescope, the, 233  
Newall (Prof. McF. A.), Death and Obituary Notice of, 421  
Newstead (A. H. L.), the Perivisceral Cavity in Ciona, 332  
Newton and Co.'s New Gyroscope Top, 354  
Newton (Prof. Alfred, F.R.S.), Mr. H. O. Forbes' Discoveries in the Chatham Islands, 101, 150  
Newton (Prof. H. A.), Fireball of January 13, 1893, 524  
Niagara Falls, Works of Cataract Construction Company at, 444  
Nicolle (M.), Modification of Loeffler's Method for Exhibiting Cilia of Micro-Organisms in Stained Preparations, 399  
Niessl (Prof. von), an Ascending Meteor, 209  
Nitride of Iron, on the Preparation and Properties of, G. J. Fowler, 529  
Nitriles in a State of Purity, a Method of Preparing, Prof. Michaelis and Dr. Siebert, 39  
Nitro-Metals, a New Series of Compounds of Metals with Nitrogen Peroxide, A. E. Tutton, 524  
Nuovo Giornale Botanico Italiano, 115, 333  
Noetting (Dr.), the Amber and Jade Mines of Upper Burma, 13; a New Variety of Amber, "Burmite," 13  
Nomenclature, Variable Star, 81  
Nomenclature, Ocean, 112  
Non-Inheritance of Acquired Characters, Dr. Alfred R. Wallace, F.R.S., 267; Dr. C. Herbert Hurst, 368  
Norcock (Captain Chas. J.), Atmospheric Phenomenon in the North China Sea, 76  
Nordenskiöld (G.), the Inner Structure of Snow Crystals, 592  
Nordling (W. de), France and International Time, 330  
Norfolk and Norwich Naturalists' Society, Transactions of, 621  
North Pole, Wanderings of the, Sir Robert Ball, 349  
North (Marianne), Some Further Recollections of a Happy Life, selected from the Journals of, Mrs. John Addington Symonds, 291  
Norway, Disastrous Landslip in, 78  
Norwegian Antarctic Whaling Expedition, 574  
Norway, the Hessian Fly in, 618  
Nottingham Meeting of the British Association, Prof. Frank Clowes, 295, 344, 419; J. S. Burdon Sanderson's, F.R.S., Inaugural Address, 464  
Nottingham Water Supply, Source of, Prof. E. Hull, 532  
Nova Aurigæ, the Genesis of, Richard A. Gregory, 6  
Nova (T.) Aurigæ Spectrum, W. W. Campbell, 524  
Nova Scotia, Hurricane in, 398  
Objectives, Optical Tests for, Dr. Ludwig Mach, 16  
Observatories: Royal Observatory, Greenwich, 112; Annual Visitation of the Greenwich Observatory, 127; the Astrophysical Observatory, 184; the Observatory of Yale University, 327; Proposed New Telescope for Cambridge Observatory, 358; Mr. Tebbutt's Observatory, 483; Celestial Photography at the Paris Observatory, 617; a New Astronomical Observatory at Manila, 623; Kew Observatory, Appointment of Mr. Charles Chree as Superintendent, 11; the Meteorological Observatory on Ben Nevis, 428; the Mont Blanc Observatory, 522, 549  
Ocean Nomenclature, 112  
Oddone (Signor), Earth's Magnetism in Neighbourhood of Magnetic Rocks, 274  
Odessa, Zapiski (Memoirs) of Novorossian Society of Naturalists, 92  
Oettel (Dr.), Action of Platinum and Copper Electrodes and of Acid and Neutral Solutions upon Amount of Copper Deposit, 230  
Officer (Graham), the Glacier Theory of Alpine Lakes, 198; New Conclusions, 342  
Official Catalogue of the Exhibition of the German Empire at the Columbian Universal Exhibition in Chicago, 176  
Ognoff (Dr. J.), Neurokeratin, 183  
Ohlmüller (Herr), Chemical and Bacterial Condition of Elbe at Magdeburg, 399  
Oil Bubbles, on a Peculiar Motion assumed by, in Ascending Tubes containing Caustic Solutions, F. T. Trouton, 529  
Oil-Spreading on Sea Surface, Prof. Oberbeck, 181  
Old and New Astronomy, Richard A. Proctor, 361; A. C. Raneyard, 416; the Reviewer, 416; S. D. Proctor-Smyth, 438; the Reviewer, 438  
Oldham (H. Y.), appointed to Cambridge Geographical Lectureship, 138; Relationship between Physical Geography and Geology, 554  
Oldham (R. D.), the Bacchus Marsh Boulder Beds, 416  
Oligodynamic Phenomena of Living Cells, Prof. Carl V. Nägeli, 331  
Olitzky (Herr), Antagonistic Effects of Bacillus Fluorescens Liquefaciens on other Organisms, 181  
Oliver (Prof. F. W.), Fogs and Horticulture, 18  
Olson (O. T.), Flashing Lights for Marine Purposes, 557  
On and Thebes, the Astronomical History of, J. Norman Lockyer, F.R.S., 318, 371  
Ophidia, Development of Pancreas in, G. Saint-Remy, 536  
Optics: a Simple Optical Photometer, Dr. Simonoff, 12; Photometer for Measuring Intensities of Lights of Different Colours, A. M. Meyer, 309; a Photometric Method Independent of Colour, O. N. Rood, 535; Optical Tests for Objectives, Dr. Ludwig Mach, 16; Electro-Optics, A. B. Basset, F.R.S., 34; a Portable Ophthalmometer, Dr. Thos. Reid, 44; Peculiar Phenomenon of Light Refraction on Snow, A. W. Whitney, 60; Method of Obtaining Determination of Refractive Index of Atmosphere for every portion of Photographic Spectrum, Messrs. Kayser and Runge, 60; Atomic Refraction of Nitrogen, Prof. Bühl, 60; Comparison of Intensities of Light by the Photo-Electric Method, J. Elster and H. Geitel, 91; the Phenomenon of Mirages Illustrated, MM. de Lépinay and Perot, 109; Method of Studying Process of Diffusion in Liquids, O. Wiener, 109; Diffraction of Light at Straight Sharp Edge of Screen, Eugen Macy, 141; Diffraction Gratings, Local Anomalies, A. Cornu, 144; Experiments on Permeability of Metallic Wire-Gratings to Polarised Heat Rays, Dr. Rubens, 288; Polarisation of Undiffracted Infra-Red Radiation by Metal Wire Gratings, H. E. J. G. du Bois and H. Rubens, 406; a Photometer, E. W. Lehmann, 406; Alternations of Colours presented by Gratings, Georges Meslin, 432; Aperture Fringes in the Experiment with Parallel Gratings, M. Georges Meslin, 608; a Reflecting Kaleidoscope, Dr. John Gorham, 159; Apparatus Illustrating Prof. Michelson's Method of Producing Interference Bands, Edwin Edser, 159; Interference Bands and their Applications, Lord Rayleigh, F.R.S., 212; Apparatus Illustrating Michelson's Method of Obtaining Interference Bands, Edwin Edser, 372; Curious Illusion, M. Bourdon, 180; Is Colour-Blindness a Product of Civilisation? Messrs. Blake and Franklin, 206; the True Origin of Contrast Colours, A. M. Mayer, 274; Diathermanous Power of Ebonite for Heat-Waves, Riccardo Arno, 299; Colours of Sky-, Sun-, Cloud-, and Candle-Light, Capt. Abney, F.R.S., 333; Magneto-Optic Rotation, Prof. Andrew Gray, 345; Absorption of Light by Platinum at Different Temperatures, Dr. G. B. Rizzo, 377; Charpentier's Experiments Demonstrative of an Oscillatory Process in the Organ of Vision and of its Dimensions, 380; Absorption of Light by Liquid Bromine, Charles Camichel, 384; a Curious Optical Phenomenon, Dr. A. Wille, 391; Hering's Theory of Colour Vision, C. L. Franklin, 517; Remarkable Case of Resuscitation of an Optical Image, Prof. T. Vignoli, 545; Simple Method of Measuring Retardation in Minerals Cut in Thin Plates, G. Cesaro, 583.  
Orchitic Liquid, Physiological and Therapeutic Effects of Injection of, MM. Brown-Séquard and d'Arsonval, 23  
Order or Chaos? 241  
Organic Colour, on the Origin of, F. T. Mott, 575  
Orientation: the Orientation of Greek Temples, F. C. Penrose, 42; the Influence of Egypt upon Temple Orientation in Greece, J. Norman Lockyer, F.R.S., 417; Orientation of Temples by the Pleiades, R. G. Haliburton, 566  
Ormerod (Eleanor A.), a Few Remarks on Insect Prevalence during the Summer 1893, 394  
O'Reilly (Prof. J. P.), Meeting of the French Association, 448  
Ornithology: an Analytical Index to the Works of the late John Gould, F.R.S., R. Bowdler Sharpe, 100; Hawks and Owls the Farmer's Friends, Dr. A. K. Fisher, 133; Wild Birds Protection, 133; Effect of Emotion on Song of Birds, Dr. Morris Gibbs, 156; Soaring of Hawk, F. C. Constable, 223; Carrier Pigeons, F. W. Headley, 223; Birds' Method of Steering, F. W. Headley, 293; Birds' Steering Methods, F. A. Lucas, 414; Adventures of a Dabchick in St. James's Park, T. B. Pigott, 322; Imitation of "Instinct" by a Male Thrush, E. Boscher, 369; Birds in a Village, W. H. Hudson, 409; Sexual Colouration of Birds, T. C. Headley, 413; the Identity of Shakespeare's Russet-pated Choughs, J. E. Harting, 445; the Coccidea of Birds, Alphonse Labbé, 536; Mechanical Genesis of Form of Fowl's Egg, Dr. J. A. Ryder, 597

- Osborn (Prof. H. F.), the Succession of Teeth in Mammals, 238; on the Mammals of the Upper Cretaceous, 462  
 Oswald (Dr. Wilhelm) *Lehrbuch der Allgemeinen Chemie*, J. W. Rodger, 49  
 Oswell (W. Cotton), Death and Obituary Notice of, 62  
 Oudemans (J. A. C.), Remarks on Herschel's Second Method of Calculating Probable Orbit of Binary Stars, 312  
 Overbeck (Prof.), Oil-Spreading on Sea Surface, 181  
 Owen (Sir Richard), the Proposed Memorial to, 297  
 Oxalic Acids in Plants, the Protecting Function of, Herr Giessler, 109  
 Oxford, Mr. E. B. Poulton, F.R.S., appointed Hope Professor of Entomology 154  
 Oxford, Human and Comparative Anatomy at, Prof. E. Ray Lankester, F.R.S., 616  
 Oxygen, Magnetic Properties of Liquid, Prof. J. Dewar, F.R.S., 89  
 Oxygen, Origin of Atmospheric, T. L. Phipson, 384  
 Oxygen, Prof. Morley's Final Determination of the Atomic Weight of, 461  
 Oxygen, Report of the Committee on the Action of Light on the Hydracids of the Halogens in the Presence of, 530  
 Oxygen, on the Physiological Action of the Inhalation of, in Asphyxia, 575  
 Oyster-Culture and Temperature, Prof. W. A. Herdman, F.R.S., 269  
 Oyster-Culture in the Roscoff Aquarium, M. de Lacaze Duthiers, 560  
 Oysters, the Green Colour in, M. Pelseneer, 12  
 Oysters, Phagocytes of Green, Prof. E. Ray Lankester, F.R.S., 75  
 Ozone, Formation of (ii.), W. A. Shenstone and M. Priest, 190  
 Ozone-Production at High Temperatures, Dr. Brunck, 354  
 Pacific Slope, Grasses of the, including Alaska and the adjacent Islands, Dr. Geo. Vasey, 411  
 Packard (A. S.), Life-History of Bombycine Moths, 252  
 Palæolithics; the American Ice-Age Drift Flints said to be of Indian Manufacture, W. H. Holmes, 253  
 Palæontology: the Boundoulau Grotto, E. A. Martel and Émile Rivière, 231; Extinct Gigantic Lemuroid (*Megalopitris Madagascariensis*) from Madagascar, C. I. F. Major, 284; Some Recent Restorations of Dinosaurs, R. Lydekker, 302; Prof. O. C. Marsh, 437; Tertiary and Triassic Gastropoda of the Tyrol, Dr. J. Dregger, 567  
 Palæozoic Glaciation in the Southern Hemisphere, E. J. Dunn, 458  
 Palestine, Astronomy of the Fellahin of, 601  
 Panmixia, a Note on, Dr. Romanes, 543  
 Paraffins and Monohalogen Derivatives, Ratio of Specific Heats of, J. W. Capstick, 260  
 Paris Academy of Sciences, 23, 47, 72, 96, 119, 144, 167, 192, 216, 240, 264, 287, 311, 336, 360, 384, 407, 432, 456, 484, 512, 535, 559, 584, 608, 631; Gift by M. and Mme. d'Abbadie to the, 421  
 Paris, M. Foubert's Map of Smokes of, M. Delahaye, 78  
 Paris Geographical Society, 40; Conversational Meetings, 327  
 Paris Observatory, Celestial Photography at the, 617  
 Parke (Surgeon-Major), Death of, 481  
 Parker (W. K.), Prof. Huxley, 12  
 Parry (John), Desulphurisation of Iron, 427  
 Pascal (Blaise), *Recit de la Grande Expérience de l'Équilibre des Liqueurs*, 436  
 Pasquale (Prof. F.), a Fall of Rain from Lime-Trees, 92  
 Pasteur, Hydrophobia Statistics for 1892 at the Institut, 544  
 Patents; New Series of Illustrated Abridgement Classes, 569  
 Patten (Dr. W.), Morphology and Physiology of Brain and Sense-Organs of Limulus, 332  
 Paulsen (A.), Hypotheses of Oscillations of Maximum Zone of Aurora, 188  
 Pearson (Prof. Karl), Asymmetrical Frequency Curves, 615  
 Peary (Lieut.), Departure on his Second Arctic Expedition of, 234  
 Peary Relief Expedition of the Academy of Natural Sciences of Philadelphia, the Arctic Problem and Narrative of the, Prof. Angelo Heilprin, 434  
 Pechelbronn Petroleum Beds, Exceptionally High Temperatures in, M. Daubrée, 360  
 Pélabon (H.), Absorption of Seleniuretted Hydrogen by Liquid Selenium, 168  
 Pelseneer (M.), the Green Colour in Oysters, 12  
 Pembrokeshire, South, the Igneous Rocks of, Messrs. Howard and Small, 532  
 Pendulums, Novel Suspension for, A. Hasemann, 399  
 Penfield (Prof.), Canfieldite, 378  
 Penrose (F. C.), the Orientation of Greek Temples, 42  
 Pereyaslawzewa (Dr. Sophie), Turbellariæ of the Black Sea, 109  
 Perfumes, Apparatus for Measuring Intensity of, Eugène Mesnard, 216  
 Periodic Comet, Finlay's, 81  
 Periodic Mercury Pump, a, Rev. Frederick J. Smith, 320  
 Perkin (A. G.), Constituents of Kamala, I., 535  
 Perkin (W. H., jun.), Sulphocamphylic Acid, 94  
 Perot (M.), the Phenomenon of Mirage Illustrated, 109  
 Peroxide, Nitrogen, Nitro-Metals, a New Series of Compounds of Metals with, A. E. Tutton, 524  
 Perrier (M.), Aluminium Chloride Compounds with Benzoyl Chloride and others of the Aromatic Series, 157  
 Perry (Prof. J., F.R.S.), the Viscosity of Liquids, 45; Seismology in Japan, 136  
 Perry's (Prof.), New Electric Current Metres, 252  
 Perspective and Colour, Prof. Einthoven, 186  
 Petermann's Mittheilungen, 425, 448  
 Petrie (Prof. W. M. Flinders), the Thieving of Antiquities, 613  
 Petroleum Beds, Pechelbronn, Exceptionally High Temperatures in, M. Daubrée, 360  
 Petrology; on the Dissected Volcano of Crandall Basin, Wyoming, Prof. J. P. Iddings, 531; W. W. Watts on Irish Petrology, 532  
 Petrushevskiy's (Prof.), Metric Measures in Russia, 298  
 Pfeil (Count), South-West Africa, 301  
 Phagocytes of Green Oysters, Prof. E. Ray Lankester, F.R.S., 75  
 Pharmacy, Galenic, R. A. Cripps, 27  
 Philippi (Dr.), Flora and Fauna of Chile and Argentina, 619  
 Philippson (Dr. A.), Types of Sea-Coasts, 597  
 Phinney (J. I.), the Treatment of Barium Sulphate in Analysis, 187  
 Phipson (T. L.), Origin of Atmospheric Oxygen, 384  
 Phisalix (M.), Production of Sporeless Anthrax Bacilli, 545  
 Phosphorescence, Animal, D. Zabolotny, 92  
 Photography: Photograph of a Bolid, 16; Inductoscript Photography, Rev. F. J. Smith, 64; Photographic Properties of Cobalt Salts, 192; Photographic Study of Sources of Light, Carcel Lamp and Electric Arc, M. Crova, 206; Stars having Peculiar Spectra, 208; Photographs of the Milky Way, Prof. E. E. Barnard, 277; Failure of Law of Equal Chemical Action, Capt. Abney, F.R.S., 285; Photographic Annual for 1893, 324; Photography of Flying Bullets, Air Jets and Sound Waves, E. and L. Mach, 353; Photography of Comet  $\delta$ , 1893, F. Quénnisset, 360; Submarine Photographs, Louis Boutan, 377; Atmospheric Refraction and Star Photographs, Prof. A. A. Rambaut, 379; Astronomical Photography, Rt. Hon. Lord Rayleigh, 391; Dr. A. A. Common, F.R.S., 459; H. F. Newall, 517; Sir Robert S. Ball, F.R.S., 541; Photography of Animals in Motion, M. Marey, 456; Apparatus for Observing and Photographing Interference and Diffraction Phenomena, W. B. Croft, 526; Congress of Photographic Society, 569, 596; Celestial Photography at the Paris Observatory, 617; Determination of Geographical Longitude, Herr C. Runge, 623  
 Photometry: a Simple Optical Photometer, Dr. Simonoff, 12; a New Photometer, A. P. Trotter, 190; Notes on, Prof. S. B. Thompson, 190; Major-General Festing, 190; Dr. Sumpner, 190; Frank Wright, 190; Prof. Ayrton, 190; Mr. Medley, 190; Mr. Swinburne, 190; Mr. Blakesley, 190; the Diffusion Photometer, Prof. J. Joly, F.R.S., 269; Photometer for Measuring Intensities of Lights of Different Colours, A. M. Mayer, 309; Colour Photometry, Captain Abney, F.R.S., 333; a Photometer, E. W. Lehmann, 406; a Photometric Method Independent of Colour, O. N. Rood, 535  
 Phototaxis and Chemiotaxis, J. S. Burdon Sanderson, F.R.S., 470  
 Phycology; Death and Obituary Notice of T. F. Kützow, 597  
 Phylloxera, Schist-impregnated Peatmoss Treatment of, F. de Mély, 512  
 Physics: Physics, Advanced Course, George F. Barker, Prof.



Oliver Lodge, F.R.S., 1; Curious Experiment by M. Harnuzescu, 13; the Variation of Surface Energy with Temperature, William Ramsay, F.R.S., and John Shields, 21; Physical Society, 45, 116, 166, 190, 263; the Viscosity of Liquids, Prof. Maurice Fitzgerald, 45; Prof. Perry, 45; Motion of Liquids Studied by Chronophotography, M. Marey, 47; Experiments to Demonstrate Structure of Flames, Prof. Smithells, 64; Breath Figures, John Aitken, 71; the Specific Heat of Carbon, H. Le Chatelier, 72; an Objection to the Kinetic Theory of Gases, H. Poincaré, 72; an Explanation of Rotation of Plane of Polarisation in a Magnetic Field, based on de Reusch's Experiments, M. Verner, 78; Improved Apparatus for Exhibiting Phenomena of Gaseous Diffusion, Prof. V. Dvorak, 79; Gaseous Diffusion, Prof. Herbert McLeod, F.R.S., 104; on the Velocity of Propagation of Gravitation Effects, S. Tolver Preston, 103; the Action of Heat and Light on Hydriodic Acid Gas, Prof. Victor Meyer and Herr Boden-stein, 111; Drawing of Curves by their Curvature, C. V. Boys, F.R.S., 116; the Foundation of Dynamics, Prof. O. J. Lodge, F.R.S., 117; Thickness and Electrical Resistance of Thin Liquid Films, 115; Profs. Reinold and Rücker, 115, 624; Prof. Sakurai's Method of Determining Temperatures of Steam from Boiling Salt Solution, 132; Herr Brodmann's Method of Determining Co-efficients of Friction of very Viscous Liquids, 132; Highly Sensitive Manometer, M. Villard, 132; Berlin Physical Society, 144, 288, 407; Relations between the Surface Tension and Relative Contamination of Water-Surfaces, Miss Agnes Pockels, 152; Experiments for Determining by Weighing Diminution of Gravity on Ascent from Earth's Surface, Drs. Richarz and Kriger-Menzel, 155; Decomposition of Steam by Heated Magnesium, Herr Rosenfeld, 157; Experiments with Vibrating Bar, C. J. Woodward, 166; Formula for Law of Molecular Force, M. van der Waals, 168; Cause of Luminosity of Heated Gases, Dr. Pringsheim, 144; the Publication of Physical Papers, James Swinburne, 197; Alex. P. Trotter, 412; A. B. Basset, F.R.S., 222, 292; Prof. Oliver Lodge, F.R.S., 292; some Points in the Physics of Golf, Sir P. G. Tait, 202; Study of Filtration of Liquids, R. Lezé, 216; Rotatory Power of Bodies belonging to Homologous Series, P. A. Guye, 216; the Third Principle of Energetics, H. Le Chatelier, 240; Ratio of Specific Heats of Paraffins and Monohalogen Derivatives, J. W. Capstick, 260; Physical Review, 274; Proper Vibrations of Medium indefinitely extended outside a Solid Body, Marcel Brillouin, 287; Experiment on Diminution of Weight at Increasing Altitudes, Dr. Kriger-Menzel, 288; the Luminiferous Ether, Sir G. G. Stokes, 306; Experiments on Resistance of Air, &c., to Motion of Falling Bodies, L. Caillaet and E. Colardeau, 311; a Periodic Mercury Pump, Rev. Frederick J. Smith, 320; Megamicros, or Sensible Effects of Proportional Reduction of Dimensions of Universe, J. Delbœuf, 406; S. Tolver Preston, 517; Mr. Love's Treatise on Elasticity, A. B. Basset, F.R.S., 415, 543; Attempts to Determine Greatest Possible Number of Physical Constants of same Piece of Metal subject to Least Mechanical Manipulation, Herr W. Voigt, 422; Investigation of Thermal Expansion of Water by Weight-Thermometer Method, L. Chappuis, 423; Recit de la Grande Expérience de l'Equilibre des Liqueurs, Blaise Pascal, 436; Prof. Wm. A. Rogers on the Marley Interferential Comparator, 461; on the Electric Strength of Solid Liquid and Gaseous Dielectrics, Profs. Macfarlane and G. W. Pierce, 461; on Fatigue in the Elasticity of Stretching, Joseph O. Thompson, 461; Opening Address in Section A of British Association, R. T. Glazebrook, F.R.S., 473; Report on a Memoir by M. Desforges on the Distribution of Intensity of Gravity at Surface of Globe, 484; Physics at the British Association, 525; Report of the Committee on Solar Radiation, 525; Prof. G. F. Fitzgerald on the Period of Vibration of Disturbances of Electrification of the Earth, 526; the Moon's Atmosphere and the Kinetic Theory of Gases, G. H. Bryan, 526; Grinding and Polishing of Glass Surfaces, Lord Rayleigh, F.R.S., 526; Apparatus for Observing and Photographing Interference and Diffraction Phenomena, W. B. Croft, 526; on Sunspots and Solar Envelopes, Rev. F. Howlett, 526; on Our Present Knowledge of Electrolysis and Electro-Chemistry, T. C. Fitzpatrick, 527; on the Connection between the Ether and Matter, Prof. O. Lodge, 527, 528; a Mechanical Analogue of Anomalous Dispersion, 527; Note on Prof. Ebert's Method of Estimating the Radiating Power of an Atom, 527; on Electric Inter-

ference Phenomena, E. H. Barton, 527; on the Passage of Electric Waves through Layers of Electrolyte, 527; Teaching of Elementary Physics, 527; on Standards of Low Electrical Resistance, J. Viriamu Jones, 528; Apparatus for Comparing Nearly Equal Resistances, F. H. Nalder, Dr. O. Lodge, F.R.S., 528; a Simple Interference Experiment, Lord Rayleigh, F.R.S., 528; on Specula for Reflecting Telescopes, Dr. A. Shafarik, 528; a New Form of Air Pump, Prof. J. J. Thompson, 529; on a Peculiar Motion assumed by Oil Bubbles in Ascending Tubes containing Caustic Solutions, F. T. Trouton, 529; Theory of Change of Properties of Liquid in Proportion to Matter in Solution invalidated in Case of Density of Dilute Aqueous Solutions, F. Kohlrausch and W. Hallwachs, 571; Modification of Hydrometer Method of Determining Densities of Gases, M. Meslans, 598; Luminous Phenomena in Vessels Filled with Rarefied Gas under Influence of Rapidly Alternating Electric Fluids, H. Ebert and E. Wiedemann, 607; Solubility of some Insoluble Bodies in Water Determined by Electric Conductivity and Solution, F. Kohlrausch and F. Rose, 607; Vapour Pressures of Aqueous Solutions, C. Dieterici, 620; Refractive Indices of Liquid Nitrogen and Air, Profs. Laveing and Dewar, 620; Endothermic Reactions Affected by Mechanical Force, M. C. Lea, 631; Interior Temperature of Bread coming out of Oven, M. Balland, 632; Crystallisation of Water by Decompression below Zero, E. H. Amagat, 632

Physiography: Elements of Physiography, Dr. Hugh Dickie, 3; A. E. Brehm, *Les Merveilles de la Nature*, La Terre, les Mers et les Continents, *Géographie Physique, Géologie et Minéralogie*, Fernand Priem, Prof. A. H. Green, F.R.S., 25; Advanced Physiography, R. A. Gregory and J. C. Christie, 339

Physiology: Arrangement of Sympathetic Nervous System, I., J. K. Langley, F.R.S., 21; Physiological and Therapeutic Effects of Injection of Orchitic Liquid, MM. Brown-Séquard and d'Arsonval, 23; the Development of Blood Corpuscles, Dr. Engel, 47; the Sense of Touch in the Blind, Dr. Goldscheider, 48; the Relationship of Cell Elements to Certain Colouring Matters, Dr. Lilienfeld, 48; Animal Heat and Physiological Calorimetry, Prof. Rosenthal, 88; Physiology of Foliage Leaves, H. T. Brown and G. H. Morris, 94; Berlin Physiological Society, 119, 288, 408;  $\delta$ -achroglobine, a Respiratory Globuline contained in Blood of Certain Mollusca, A. B. Griffiths, 119; Correlation of Action of Antagonistic Muscles, Dr. C. S. Sherrington, 141; Investigation of Nerve Roots Forming Lumbo-Sacral Plexus of Macacus Rhesus, J. S. R. Russell, 141; Analysis by Electric Stimulation of Motor Region of Cortex Cerebri in Macacus Sinicus, Dr. C. E. Beever and Victor Horsley, F.R.S., 142; Urea in Bird-Blood and its Bearing on Uric Acid Formation in Animals, Sir Alfred Garrod, F.R.S., 142; Trophoblast of Tupaja Javanica, M. Hubrecht, 168; the Rede Lecture, Prof. Michael Foster, Sec. R. S., 178; Alkalies of Blood and Lymph, J. M. Syechenov, 188; Neurokeratin, Dr. J. Ogneff, 188; Duration of Excitability of Nerve- and Muscles after Death, A. d'Arsonval, 240; Electric Excitability of Muscles after Death, the Myophone, M. d'Arsonval, 399; Process of Secretion in Skin of Common Eel, Prof. E. W. Reed, 260; Experiments on Transplantation of Slips of Small Intestine into Bladder, Dr. Rosenberg, 288; Methods of Blood-Titration, Dr. Loewy, 288; Experiments on Coordinating Centres of Cardiac Ventricle, W. T. Porter, 288; Influence of Exercise on Interchange of Respiratory Gases, W. Marcell, F.R.S., 309; Morphology and Physiology of Brain and Sense Organ of Limulus, Dr. W. Potter, 332; the Pervisceral Cavity in Ciona, A. H. Newstead, 332; Early Stages in Development of Distichopora Violacea, Dr. S. J. Hickson, 332; Effects of Injection of Sugar into a Vein, Vaughan Harley, 334; Microscopical Investigations on Development and Function of Mammary Gland, Dr. Benda, 408; Relation of Glossopharyngeal and Olfactory Nerves to Sensory End-Organs, Dr. Baginsky, 408; Clotting of Blood, Dr. Lilienfeld, 408; Action of Extracts of Animal Tissues on Number of White Corpuscles, Dr. Jacobs, 408; Mechanism of closing of Ductus Bogalli, Dr. Paul Strassmann, 408; Origin and Scope of Modern Physiology, J. S. Burdon Sanderson, F.R.S., 465; Physiological Papers of Prof. Sachs, 513; Development of Pancreas in Ophidia, G. Saint-Remy, 536

Pickering (S. U.), Hydrates of Sodium, Potassium, and Lithium Hydroxides, 117; Properties of some Strong Solutions, 535

- Pickering (Prof.), Jupiter's Satellites, 81; the Satellites of Jupiter, 209  
 Pidgeon's (W. R.) Influence Machine, 263  
 Pierce (Prof. G. W.), on the Electric Strength of Solid, Liquid, and Gaseous Dielectrics, 461  
 Pigeons, Carrier, F. W. Headley, 223  
 Pigment, Animal, containing Copper, Turacin, Prof. A. H. Church, F.R.S., 209  
 Pigott (T. D.), Adventures of a Dabchick in St. James's Park, 322  
 Pike (Capt. Richard), Death of, 82  
 Pillow Problems, Charles L. Dodgson, M.A., 564  
 Pionchon (M.), a Product of Incomplete Oxidation of Aluminium, 407  
 Pirsson (L. V.), Volcanic Rocks from Gough's Island, 70  
 Placostylus, the Range of, C. Hedley, 38  
 Plague of Field Voles, 282  
 Plane Tree Honey, Edm. Jandrier, 608  
 Planet Venus, the, Ellen M. Clerke, 447  
 Planet Victoria, Observations of the, Dr. Gill, 276  
 Planetary Nebula, B. D. + 41° 4004, Parallax of, 548  
 Planets, the Brightness of the Major and Minor, Dr. G. Muller, 15  
 Plant Hybrids, the Minute Structure of, Prof. J. Muirhead Macfarlane, 402  
 Plants, Hydrocyanic Acid in, 96  
 Plants, Physiology of, Prof. Sachs, 513  
 Pleiades, Orientation of Temples by the, R. G. Haliburton, 566  
 Plummer (William E.), Modern Meteorology, Frank Waldo, 97  
 Plymouth Marine Biological Station, the Week's Work of the, 14, 39, 61, 81, 111, 134, 158, 183, 208, 232, 253, 275, 300, 326, 354, 379, 401, 425, 447, 483, 524, 547, 573, 600, 622  
 Pneumatic Caulking and Chipping Tool, Mr. Ross, 556  
 Pockels (Miss Agnes), Relations between the Surface-Tension and Relative Contamination of Water Surfaces, 152  
 Pocock (R. I.), Notes upon the Habits of some Living Scorpions, 104  
 Poincaré (H.), an Objection to the Kinetic Theory of Gases, 72  
 Poison, Arrow, of East Equatorial Africa, Dr. T. R. Fraser, F.R.S., and Dr. Joseph Tillie, 92  
 Poisoning of the Future, the, Dr. S. S. Sprigge, 250  
 Polarisation: an Explanation of Rotation of the Plane of Polarisation in Magnetic Field based on De Reusch's Experiments, M. Verner, 78; Polarization Rotatoire, Réflexion et Réfraction Vitreuses, Réflexion Métallique, G. Fonsseureau, 266; Residues of Polarisation, E. Bouty, 336; Polarisation, using a Thin Metal Partition in a Voltmeter, John Daniel, 524; Influence of State of Surface of Platinum Electrode upon its Initial Capacity of Polarisation, J. Colin, 584  
 Politis (Prof. N. G.), the Breaking of Clay Vessels as a Funeral Rite in Modern Greece, 445  
 Pomel (A.), the Norway Rat in the Ancient Western World, 72  
 Pomerania, Sandstorm in, 322  
 Poore (George Vivian), Essays on Rural Hygiene, 266  
 Pope (W. J.), New Haloid Derivatives of Camphor, 118  
 Popular Botany, John Bidgood, 175  
 Port Erin Marine Biological Station, the, 423  
 Porter (A. W.), Electric Circuits of Measurable Inductance and Capacity, Flow and Dissipation of Energy in, 406  
 Porter (W. T.), Experiments on Coordinating Centres of Cardiac Ventricle, 288  
 Postlethwaite (J.), Intrusive Sheet of Diabase near Bassenthwaite, 286  
 Potato, Relation to Crop obtained of Number of Eyes on Seed Tuber, J. C. Arthur, 353  
 Potstones Found near Seaforth, Geo. Abbott, 315  
 Pottery, New Caledonian, Otis T. Mason, 543  
 Pouchet (G.), Plankton of Northern Lagoon of Jan Mayen, 119; the Various Kinds of Arctic Ice, 251  
 Poulton (E. B., F.R.S.), Soot-Figures on Ceilings, 29; appointed Hope Professor of Entomology at Oxford, 154; Colours of certain Lepidopterous Larvæ largely due to Food-Plant Pigments, 239  
 Powell (J. W.), Seventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1885-86, 3  
 Poynting (Prof. J. H., F.R.S.), the Mean Density of the Earth, 370  
 Præsepe, Comet Finlay and the, 512  
 Precht (Julius), Absolute Measurements on Discharge of Electricity from Points, 140  
 Precision of Measurements, Discussion of the, Silas W. Holman, 221  
 Preece (W. H., F.R.S.), Submarine Boreers and Submarine Cables, 160; Effect of City and South London Electric Railway on Earth, 205  
 Prehistoric Naval Architecture of Northern Europe, G. H. Boehmer, 274  
 Prenatal Influences on Character, Dr. Alfred R. Wallace, F.R.S., 389  
 Preston (S. Tolver), on the Velocity of Propagation of Gravitation Effects, 103; Megamicros, 517  
 Preyer (W.), Das Genetische System der Chemischen Elemente, W. Preyer, 173  
 Priem (Fernand), A. E. Brehm, Les Merveilles de la Nature, La Terre, les Mers et les Continents; Géographie Physique, Géologie et Minéralogie, Prof. A. H. Green, F.R.S., 25  
 Priest (M.), Apparatus for Studying Action of Electric Discharge on Oxygen, 159; Formation of Ozone (ii), 190  
 Primitive Music, Richard Wallaschek, Prof. C. Lloyd Morgan, 290  
 Pringsheim (Dr.), Cause of Luminosity of Heated Gases, 144  
 Pritchard (Dr. Charles, F.R.S.), Death of, 107; Obituary Notice of, 130  
 Procedure, Linnean Society, 150  
 Proctor (Richard A.), Old and New Astronomy, 361  
 Proctor-Smyth (Mrs. S. D.), Old and New Astronomy, 438  
 Propagation of Gravitation Effects, on the Velocity of, S. Tolver Preston, 103  
 Propagation of Electric Energy, Dr. Heinrich Hertz, 538  
 Protection of Woodlands, the, 337  
 Protozoan, on the Digestive Ferments of a Large, Prof. Marcus Hartog and Augustus E. Dixon, 575  
 Psychology: Elements of Psychology, James Mark Baldwin, 292; Experimental Psychology, J. S. Burdon-Sanderson, F.R.S., 469  
 Pubblicazioni di Vatican Observatory, 180  
 Pubblicazioni della Specola Vaticana, 512  
 Public Health Laboratory Work, Henry R. Kenwood, 433  
 Public Health Problems, John F. J. Sykes, 27  
 Pump, a Periodic Mercury, Rev. Frederick J. Smith, 320  
 Pupin (Mr.), Oscillations of Low Frequency and their Resonance, 60  
 Pye-Smith (Dr. P. H., F.R.S.), the Harveian Oration, 601  
 Pyramid Builders, on the Early Temple and, J. Norman Lockyer, F.R.S., 55  
 Quaternions, the Discussions on, Sir Robert S. Ball, F.R.S., 391  
 Quaternions, Vectors and, Prof. Alexander Macfarlane, 75, 540; Alfred Lodge, 198; Prof. C. G. Knott, 148, 516  
 Quaternions and Vector Analysis, Prof. J. Willard Gibbs, 364  
 Quarterly Journal of Microscopical Science, 115, 332  
 Queensland and New Caledonia, Submarine Cable laid between, 623  
 Quémisset (F.), Photography of Comet *b*, 1893, 360  
 Quito, the Perennial Spring Climate of, Dr. J. Hann, 352  
 Racial Dwarfs in the Pyrenees, J. S. Stuart-Glennie, 294  
 Rae (Dr. John), Death of, 296; Obituary Notice of, 321  
 Raiaeta, Strange Heathen Ceremony at, Miss Teaira Henry, 398  
 Rain-Making Experiments at Dublin, 522  
 Rainfall, Analysis of Causes of, Prof. G. E. Curtis, 631  
 Rainfall, the Greatest in Twenty-four Hours, E. Douglas Archibald, 77, 317; J. S. Gamble, 459  
 Rainfall, a Remarkable, Clement L. Wragge, 3  
 Rainfall, on Secular Variations of Our, 367  
 Rambaut (Prof. A. A.), Distortion of Photographic Star Images due to Refraction, 47; Atmospheric Refraction and Star Photographs, 379  
 Ramsay (Wm., F.R.S.), the Variation of Surface Energy with Temperature, 21; Boiling and Melting Points of Nitrous Oxide, 22; Note on Combination of Gases, 262; the Conditions Determinative of Chemical Change: some Comments on Prof. Armstrong's Remarks, 267  
 Ranyard (A. C.), Old and New Astronomy, 416  
 Raps (Herr), the Motion of Vibrating Strings, 324  
 Rassam (H.), the Thieving of Assyrian Antiquities, 508, 540

- Rateau (M.), the Hypothesis of Sub-Continental Bells, 484  
 Rattlesnake, Supposed Suicide of a, W. H. Wood, 391; E. L. Garbett, 438; Prof. E. Ray Lankester, F.R.S., 369  
 Ravenstein (E. G.), Relationship between Physical Geography and Geology, 554  
 Rawson (Christopher), a Manual of Dyeing, 170  
 Rayleigh (Rt. Hon. Lord, F.R.S.), Interference Bands and their Applications, 212; Astronomical Photography, 391; Grinding and Polishing of Glass Surfaces, 526; a Simple Interference Experiment, 528  
 Reale Accademia dei Lincei, Election of Fellows, 421  
 Reason *versus* Instinct, Charles William Purnell, Dr. Alfred R. Wallace, 73  
 Rebeur Paschwitz (Dr. E. von), Earth Movements, 326; a Remarkable Source of Error, 401  
 Rebière (A.), Mathématiques et Mathématiciens, Pensées et Curiosités, 410  
 Reciprocating Mechanism, Automatic Balance of, Mr. Beaumont, 556  
 Recoura (A.), Chromopyrosulphuric Acid, 253, 264  
 Rede Lecture, the, Prof. Michael Foster, Sec. R. S., 178  
 Reed (F. R. C.), Abnormal Forms of Spirifera Lineata from Carboniferous Limestone, 143  
 Reed (L.), Capillary Separation of Substances and Solution, 118  
 Reid (Prof. E. W.), Process of Secretion in Skin of Common Eel, 260  
 Reid (Dr. Thos.), a Portable Ophthalmometer, 44  
 Keinold (Prof. A. W.), Thickness and Electrical Resistance of Thin Liquid Films, 115; Thickness and Electrical Conductivity of Thin Liquid Films, 624  
 Remarkable Hailstorms, Dr. H. J. Johnston-Lavis, 294  
 Remington (E. C.), Luminous Discharges in Electrodeless Vacuum Tubes, 45  
 Research Laboratories for Women, Prof. A. W. Rücker, F.R.S., 590  
 Reigers (Dr.), Products of Sublimation of Arsenic, 510
- REVIEWS AND OUR BOOKSHELF:—  
 Physics, Advanced Course, George F. Barker, Prof. Oliver Lodge, F.R.S., 1  
 Die Kosmologie der Babylonier, P. Jensen, 2  
 Elements of Physiography, Dr. Hugh Dickie, 3  
 Seventh Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1885-86, J. W. Powell, 3  
 A. E. Brehm, Les Merveilles de la Nature, La Terre, les Mers et les Continents, Géographie Physique, Géologie et Minéralogie, Fernand Priem, Prof. A. H. Green, F.R.S., 25  
 The Collected Papers of Sir Wm. Bowman, Bart. F.R.S., Edited by J. Burdon Sanderson, F.R.S., and J. W. Hulke, F.R.S., 26  
 Aids to Biology, Joseph W. Williams, 26  
 Public Health Problems, John F. J. Sykes, 27  
 Galenic Pharmacy, R. A. Cripps, 27  
 Lehrbuch der Allgemeinen Chemie, Dr. Wilhelm Ostwald, J. W. Rodger, 49  
 The Steam Engine: a Treatise on Steam Engines and Boilers, Daniel Kinnear Clark, N. J. Lockyer, 51  
 Louis Agassiz, his Life and Work, Dr. Charles Frederick Holder, Prof. T. G. Bonney, F.R.S., 52  
 Beiträge zur Biologie und Anatomie der Lianen, im Besonderen der in Brasilien einheimischen Arten, Dr. H. Schenck, 53  
 The Intelligence of Animals, Charles Wm. Purnell, Dr. Alfred R. Wallace, 73  
 The Principles of Agriculture, G. Fletcher, 74  
 Au Bord de la Mer, Géologie, Faune et Flore des Côtes de France, Dr. E. L. Trouessart, 74  
 Modern Meteorology: an Outline of the Growth and Present Condition of some of its Phases, Frank Waldo, Wm. E. Plummer, 97  
 Telephone Lines and their Properties, Wm. J. Hopkins, Francis G. Baily, 99  
 An Elementary Treatise on Modern Pure Geometry, R. Lachlan, 100  
 Analytical Index to the Works of the late John Gould, F.R.S., R. Bowdler Sharpe, LL.D., 100  
 An Elementary Treatise on Pure Geometry, J. W. Russell, 101  
 Sun, Moon and Stars, Astronomy for Beginners, A. Gilberne, 101  
 A Vertebrate Fauna of Argyll and the Inner Hebrides, J. A. Harvey Brown and T. E. Buckley, 123  
 Gun and Camera in Southern Africa, H. Anderson Bryden, 125  
 Dictionary of Applied Chemistry, Prof. T. E. Thorpe, F.R.S., Sir H. E. Roscoe, F.R.S., 145  
 The Universal Atlas, 147  
 Types of Animal Life, St. George Mivart, F.R.S., 148  
 Science Teaching in Schools, Dr. Henry Dyer, 148  
 Theory of Functions of a Complex Variable, Dr. A. R. Forsyth, Prof. W. Burnside, F.R.S., 169  
 A Manual of Dyeing for the Use of Practical Dyers, &c., Edmund Knecht, Christopher Rawson, Richard Loewenthal, Prof. R. Meldola, F.R.S., 170  
 A Manual of Bacteriology, G. M. Sternberg, 172  
 Lehrbuch der Zoologie, Prof. Richard Hertwig, Prof. E. Ray Lankester, F.R.S., 173  
 Zoology of the Invertebrata, A. O. Shipley, Prof. E. Ray Lankester, F.R.S., 173  
 Das Genetische System der Chemischen Elemente, W. Preyer, 173  
 The Future of British Agriculture, Prof. Sheldon, 174  
 Dynamo Electric Machinery, Silvanus P. Thompson, 193  
 Capt. Cook's Journal, 1768-81, edited by Capt. J. L. Whar-ton, F.R.S., Sir J. D. Hooker, F.R.S., 195  
 The Soil in Relation to Health, H. A. Miers and R. Crossley, 196  
 Practical Astronomy, P. S. Michie and S. F. Harlow, 197  
 The Great Barrier Reef of Australia, W. Saville-Kent, Prof. A. C. Haddon, 217  
 A Manual of Bacteriology, A. B. Griffiths, 219  
 Die Thermodynamik in der Chemie, J. J. Van Laar, 220  
 Discussion of the Precision of Measurements, S. W. Holman, 221  
 Traité Pratique d'Analyse Chimique et de Recherches Toxicologiques, C. Guérin, 221  
 The Glacial Nightmare and the Flood, Sir Henry H. Howorth, F.R.S., T. McKenny Hughes, F.R.S., 242  
 Original Papers on Dynamo Machinery and Allied Subjects, J. Hopkinson, F.R.S., Prof. A. Gray, 244  
 The Dynamo, C. C. Hawkins and F. Wallis, Prof. A. Gray, 244  
 Modern Microscopy, M. J. Cross, 246  
 Lectures on Sanitary Law, A. Winter Blyth, 247  
 Vertebrate Embryology, A. Milnes Marshall, Prof. E. R. Lankester, F.R.S., 265  
 Essays on Rural Hygiene, George Vivian Poore, 266  
 Die Klimate der Geologischen Vergangenheit und ihre Beziehung zur Entwicklungsgeschichte der Sonne, Eug. Dubors, 266  
 Polarization Rotatoire, Réflexion et Réfraction Vitreuses, Réflexion Métallique, G. Fousserau, 266  
 Primitive Music, Richard Wallaschek, Prof. C. Lloyd Morgan, 290  
 Some Further Recollections of a Happy Life, selected from the Journals of Marianne North, edited by Mrs. John Addington Symonds, 291  
 Elements of Psychology, James Mark Baldwin, 292  
 An Introduction to the Study of Geology, Edward Aveling, 292  
 Catalogue of the Snakes in the British Museum, George Albert Boulenger, W. T. Blanford, F.R.S., 313  
 A Handbook for Travellers in Switzerland, 314  
 A Handbook on the Steam Engine, Herman Haeder, N. J. Lockyer, 314  
 Heat, Mark H. Wright, 315  
 The Protection of Woodlands, John Nisbet, 337  
 Brief Guide to the Common Butterflies of the United States and Canada, Samuel Hubbard Scudder, W. F. Kirby, 338  
 The Life of a Butterfly, Samuel Hubbard Scudder, W. F. Kirby, 338  
 Life with Trans-Siberian Savages, E. Douglas Howard, 339  
 Advanced Physiology, R. A. Gregory and J. C. Christie, 339  
 Proceedings of the Edinburgh Mathematical Society, 340  
 Old and New Astronomy, Richard A. Proctor, 361  
 Erdbebenkunde. Die Erscheinungen und Ursachen der Erdbeben, die Methoden ihrer Beobachtungen, Dr. Rudolf Hoernes, 363



- Étude sur les Tremblements de Terre, Léon Vinot, 363  
 The Points of the Horse, M. Horace Hayes, 364  
 Fragments of Earth Lore, James Geikie, F.R.S., 385  
 Diagnostik der Bacterien des Wassers, Dr. Alexander Lustig, Mrs. Percy Frankland, 386  
 Katechismus der Meteorologie, Prof. Dr. W. J. van Bebbber, 387  
 The New Technical Educator, 388  
 Wetterbüchlein. Von wahrer Erkenntniss des Wetters, Leonhard Reynman, 389  
 Birds in a Village, W. H. Hudson, 409  
 Mathématiques et Mathématiciens, Pensées et Curiosités, A. Rebière, 410  
 Grasses of the Pacific Slope, including Alaska and the adjacent Islands, Dr. George Vasey, 411  
 Reveries of World History, from Earth's Nebulous Origin to its Final Ruin, T. Mullett Ellis, 411  
 Public Health Laboratory Work, Henry R. Kenwood, 433  
 The Arctic Problem and Narrative of the Peary Relief Expedition, Angelo Heilprin, 434  
 Vorlesung über Maxwell's Theorie der Electricität und des Lichtes, Dr. Ludwig Boltzmann, 435  
 Geology, an Elementary Handbook, A. J. Jukes-Browne, 435  
 Recit de la Grande Expérience de l'Équilibre des Liqueurs, Blaise Pascal, 436  
 Hydrostatics and Elementary Hydrokinetics, George Minchin, Prof. A. G. Greenhill, F.R.S., 457  
 Gesammelte Abhandlungen über Pflanzen-physiologie, Julius Sachs, 513  
 On English Lagoons, P. H. Emerson, 515  
 The Mechanics of Architecture, E. Wyndham Tarn, 515  
 An Introduction to the Study of the Diatomaceæ, Fred. Wm. Mills, 537  
 Untersuchungen über die Ausbreitung der Electricischen Kraft, Heinrich Hertz, 538  
 Helps to the Study of the Bible, Henry Frowde, 539  
 Differential Calculus for Beginners, Joseph Edwards, 539  
 Berzelius und Liebig, 561  
 Manual of Bacteriology for Practitioners and Students, Dr. S. L. Schenk, 562  
 Exploration of Mount Kina Balu, North Borneo, John Whitehead, 564  
 Pillow Problems, Charles L. Dodgson, 564  
 The A B C Five-Figure Logarithms, C. J. Woodward, 564  
 Enunciations in Arithmetic, Algebra, Euclid, and Trigonometry, P. A. Thomas, 564  
 The Lepidoptera of the British Islands, Charles G. Barrett, W. F. Kirby, 585  
 British Locomotives, C. J. Bowen Cooke, N. J. Lockyer, 586  
 Sécheresse 1893, ses Causes, Abbé A. Fortin, 587  
 Geological and Solar Climates, Marsden Manson, 588  
 A Manual of Electrical Science, George G. Burch, 588  
 A Treatise on Analytical Statics, Edward John Routh, Prof. A. G. Greenhill, F.R.S., 609  
 Pocket-Book of Useful Formulæ and Memoranda for Civil and Mechanical Engineers, Sir Guilford L. Molesworth and Robert Bridges Molesworth, 610  
 Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army, Dr. A. T. Myers, 611  
 Lehrbuch der Botanik nach dem Gegenwärtigen Stand der Wissenschaft, 612  
 The Elements of Natural Science, Dr. H. Wettstein, 612  
 A Short Course in the Theory of Determinants, L. G. Weld, 612  
 A Practical Treatise on Bridge Construction, T. Claxton Fidler, 612  
 The Amphioxus and its Development, Dr. B. Hatschek, 613  
 Reynolds (Prof. J. Emerson, F.R.S.), Arrangements for Work of Chemical Section of the British Association, 416; Opening Address in Section B of the British Association, 477  
 Reynman (Leonhard), Wetterbüchlein, 389  
 Rhine at Geneva, the Serpent d'Eau of the, H. Faye, 584  
 Richards (E. W.), Basic Steel, English and Foreign, 113  
 Richardson (A.), Action of Light in Prevention of Putrefaction and Formation of Hydrogen Peroxide, 117  
 Richardson (Dr.), the Expansion of Chlorine and Bromine under the Influence of Light, 530  
 Richardson (Mr.), Bactericidal Action of Peroxide of Hydrogen, 599  
 Richarz (Dr. Franz), Experiments for Determination by Weighing of Diminution of Gravity on Ascent from Earth's Surface, 155  
 Richthofen (Baron F. von), Festschrift in Celebration of his Sixtieth Birthday, 597  
 Rideal (Dr. S.), the Iodine Value of Sunlight in the High Alps, 529  
 Rigbi (Augusto), Apparatus for producing Hertzian Oscillations of Short Wave-length, 181; Electrical Oscillations of very small Wave-length, 299  
 Rigler (Herr), Value of Ammonia Vapour as a Disinfectant, 298  
 Rigollot (M.), the Electro-Chemical Actinometer, 38  
 Riley (Prof. C. V.), the Ox Bot-fly in the United States, 378; Pollination of Yucca, 523  
 Rive (De La), Interference of Electric Waves after Reflection from Metallic Screen, 252  
 Rizzo (Dr. G. B.), the Climate of Turin, 108; Absorption of Light by Platinum at Different Temperatures, 377  
 Roberts (Charlotte F.), Reduction of Nitrous Acid by Ferrous Salts, 431; Estimates of Chlorates and Nitrates in one Operation, 535  
 Roberts (Dr. R. D.), Relationship between Physical Geography and Geology, 554  
 Roberts-Austen (Prof.), the Recording Pyrometer, 113  
 Robinson's (E. E.) Influence Machine, 263  
 Robertson (Chas.), Insects and Flowers, Labiatae, 619  
 Robinson (Prof.), the Wickstead Testing Machine, 557  
 Roche's Limit, Prof. G. H. Darwin, F.R.S., 54  
 Rock River Basin in Illinois, on Changes of Drainage in the, Frank Leverett, 462  
 Rodger (J. W.), Lehrbuch der Allgemeinen Chemie, Dr. Wilhelm Ostwald, 49  
 Rogers (Prof. Wm. A.) on the Morley Interferential Comparator, 461  
 Rogers (W. A. C.), Preparation of Active Amyl Alcohol and Active Valeric Acid from Fusel Oil, 535  
 Romanes (Dr. Geo. J., F.R.S.), the Use of Ants to Aphides and Coccidæ, 54; Telegony, 515; a Note on Panmixia, 543  
 Romburgh (Mr. Van), Hydrocyanic Acid in Plants, 96  
 Rome, Solar Observations at the Royal College, Prof. Taccini, 158  
 Ronali's (Sir Francis) Experiments in Electric Telegraphy, John Sime, 325  
 Rood (O. N.), a Photometric Method independent of Colour, 535  
 Rordame-Quénisset Comet, 1893, 326, 401; Herr E. Lamp, 355; the Spectrum of the, Prof. Campbell, 379  
 Roscoe (Sir H. E., F.R.S.), Dictionary of Applied Chemistry, 145  
 Roscoff Aquarium, Oyster-Culture in the, M. de Lacaze-Duthiers, 560  
 Rose (F.), Solubility of some "Insoluble" Bodies in Water Determined by Electric Conductivity of Solution, 607  
 Rose (T. K.), Limits of Accuracy of Gold Bullion Assaying, 22; the Volatilisation of Gold, 22  
 Rosenberg (Dr.), Experiments on Transplantation of Slips of Small Intestines into Bladder, 288  
 Rosenfeld (Herr), Decomposition of Steam by Heated Magnesium, 157  
 Rosenthal (Prof.), Animal Heat and Physiological Calorimetry, 88  
 Rosiwal (August), New Method of Determining Comparative Hardness of Substances, 180  
 Ross (Mr.), Pneumatic Caulking and Chipping Tool, 556  
 Rotation, Magneto-Optic, Prof. Andrew Gray, 345  
 Rotation, the Dynamics of: a New Gyroscope Top, Newton and Co., 354  
 Rotch (A. L.), Meteorological Station at Charchani, Peru, the Highest in the World, 631  
 Rothamsted Laboratory, Photographs Relating to Working of, 63  
 Rothamsted Jubilee, the, 228, 289, 296, 327  
 Rothera (C. B.), on the Ætiology and Life-History of some Vegetal Galls and their Inhabitants, 575  
 Rothpletz (Dr.), Coral Reefs, 576  
 Rousseau (G.), Chloroborate of Iron, 119  
 Routh (Edward John, F.R.S.), a Treatise on Analytical Statics, Prof. A. G. Greenhill, F.R.S., 609  
 Rouville (M. de), the Cambrian of the Hérault, 432

- Rouvier (G.), Fixation of Iodine by Starch, 584  
 Royal Geographical Society, 114; the Metallists, 59; Anniversary Meeting, 114; Refusal to Admit Ladies as Fellows, 234  
 Royal Meteorological Society, 119, 239  
 Royal Microscopical Society, 71, 167, 286  
 Royal Observatory, Greenwich, 112  
 Royal Society, 21, 44, 70, 92, 115, 131, 141, 159, 164, 215, 239, 260, 284, 309, 333, 359, 406; Prof. E. Ray Lankester, F.R.S., 247; W. T. Thiselton-Dyer, F.R.S., 247; Selected Candidates, 8; Royal Society Soirée, 63; Royal Society Election, W. T. Thiselton-Dyer, F.R.S., 121  
 Royal Society of New South Wales, 36, 536, 584  
 Rubens (Dr. H.), Experiments on Permeability of Metallic Wire-Gratings to Polarised Heat-Rays, 288; Polarisation of Undiffracted Infra-red Radiation by Metal Wire-Gratings, 406  
 Rücker (Prof. A. W., F.R.S.), Thickness and Electrical Resistance of Thin Liquid Films, 115; the Fundamental Axioms of Dynamics, 126; Research Laboratories for Women, 590  
 Rubemann (S.), Formation of Pyridine Derivations from Unsaturated Acids, 94  
 Rule for Finding the Day of the Week corresponding to any given Day of the Month and Year, a Simple, Dr. C. Braun, 222  
 Runge and Kayser (Messrs.), Method of obtaining Determination of Refractive Index of Atmosphere for every Portion of Photographic Spectrum, 60  
 Runge (Herr C.), Determination of Geographical Longitude, 623  
 Rural Hygiene, Essays on, George Vivian Poore, 266  
 Russell (J. S. R.), Investigation of Nerve-Roots forming Lumbo-Sacral Plexus of *Macacus Rhesus*, 141  
 Russell (J. W.), an Elementary Treatise on Pure Geometry, 101  
 Russell (Mr.), Bacteria in their Relation to Vegetable Tissues, 422  
 Russia: Russian Gloves made from Foal-Skins, 79; Agriculture-Teaching in Russian Schools, 156; Metric Measures in Russia, Prof. Petrushevskiy's System, 298; Russian Society of Fruit Culture, Projected International Exhibition, 376; Magnetic Observations recently made in Russia, Em. Bouquelot, 512; Geological Survey of Russia, issue of General Map, 570  
 Rustless Steel, H. G. Fourcade, 590  
 Ryder (J. A.), the Production of Monstrosities, 252; Mechanical Genesis of Form of Fowl's Egg, 597  
 Sachs (Prof. Julius), *Gesammelte Abhandlungen über Pflanzen-Physiologie*, 513  
 Secken (Baron C. R. Osten), Singular Swarms of Flies, 176  
 St. James' Park, Adventures of a Dabchick in, T. D. Pigott, 322  
 St. Petersburg, Projected Russian International Exhibition of Fruit-Culture, 376  
 Saint Remy (G.), Development of Pancreas in *Ophidia*, 536  
 St. Vincent, Botanical Exploration of, H. H. Smith and G. W. Smith, 577  
 Sagacity in Horses, William White, 199  
 Sagastyr, the Magnetic Elements at, General de Tills, 584  
 Sakurai's (Prof.), Method of Determining Temperature of Steam from Boiling Salt Solution, 132  
 Salomons (Sir David), Experiments upon Attraction between two Vacuum Tubes, 230  
 Salt Industry, the Middlesbrough, Richard Grigg, 356  
 San Francisco, Projected International Exhibition at, 445  
 Sandemann (Dr. Archibald), Death of, 229  
 Sanderson (J. Burdon, F.R.S.), the Collected Papers of Sir William Bowman, F.R.S., 26; Physico-Chemical and Vitalistic Theories of Life, 574; the Use of Scientific Terms, 613  
 Sandwich Islands, Zoology of the, David Sharp, 574  
 Sanitary Law, Lectures on, A. Wynter Blyth, 246  
 Saniter (E. H.), the Desulphurisation of Iron and Steel, 113  
 Santal Colonists, Settlement of, in the Bengal Duars, E. Heawood, 555  
 Sarasin (M.), Interference of Electric Waves after Reflection from Metallic Screen, 252  
 Sarasin (Dr. Ed.), Obituary Notice of Jean Daniel Colladon, 396  
 Saran (M.), the Work of J. D. Colladon, 360  
 Satellites, Jupiter's, Prof. Pickering, 81, 209  
 Savannah, Disastrous Cyclone at, 421  
 Saville-Kent's (Mr. W.) Collection of Western Australian *Madreporaria*, 509  
 Saxony, Fall of Snowballs in, Dr Paul Schreiber, 11  
 Sayce (Prof.), the Sinaitic Peninsula, 301  
 Sayers (W. B.), the Prevention and Control of Sparking, 324  
 Scandinavia, on Anglo-Saxon Remains and Coeval Relics from, Prof. Hans Hildebrand, 557  
 Schäfer (Dr.), Well-Crystallised Potassium and Ammonium Selenium Bromides obtained by, 80  
 Schenck (Dr. H.), Beiträge zur Biologie und Anatomie der Lianen, im Besonderen der in Brasilien einheimischen Arten, 53  
 Schenk (Dr. S. L.), Manual of Bacteriology for Practitioners and Students, 562  
 Schiotz (Herr), Solar Heat as an Agent in hindering Glacier Growth, 156  
 Schleswig, South-West, Changes in Coast-Line of, Dr. R. Hanson, 448  
 Schoenrock (A.), Remarkable Oscillation of Rainfall at St. Petersburg, Feb. 11, 1893, 229  
 Schönrock (Herr), Specific Rotation of Salts Independent of Electrolytic Dissociation, 230  
 Schott (Dr. G.), Behaviour of Storms of Indian Ocean, 597  
 Schoute (M.), Thread-Models of Developables related to Higher Algebraical Equations, 168  
 Schröder (Franz), Hydrazine and its Compounds, 483  
 Schreiber (Dr.), Fall of Snowballs in Saxony, 11  
 Schryver (S. B.), Formula of Terpenylic Acid, 535  
 Schulhof (M.), Comet Finlay (1886, vii.), 233, 254  
 Schunck (E.), Supplementary Notes on Madder Colouring Matters, 263  
 Schütte (R.), the Tucher Haide, 570  
 Science: Science in Bombay, 13; the Appreciation of Science by German Manufacturers, Prof. Henry E. Armstrong, F.R.S., 29; the Interdependence of Abstract Science and Engineering, Dr. William Anderson, F.R.S., 65; Science Teaching in Schools, Dr. Henry Dyer, 148; Tinctorial Art and Science, Prof. R. Meldola, F.R.S., 170; the Future of Science, Sir John Lubbock, F.R.S., 273; the Publication of Physical Papers, James Swinburne, 197; Alex. P. Trotter, 412; the Publication of Physical Papers, A. B. Basset, F.R.S., 222, 292; Prof. Oliver Lodge, F.R.S., 292; Science in the Magazines, 249, 349, 443, 543; the Publication of Scientific Papers, J. Y. Buchanan, F.R.S., E. Wyndham Hulme, 340, A. B. Basset, 529; the Position of Scientific Experts, 381, 423; Science Classes in Connection with the London County Council, 383; the Department of Science and Art, 403; Organisation of Scientific Literature, J. G. Donnan, A. B. Basset, F.R.S., 436; W. B. Croft on the Plan of Science Teaching at Winchester School, 527; Thoughts on the Bifurcation of the Sciences suggested by the Nottingham Meeting of the British Association, Prof. Oliver J. Lodge, F.R.S., 564; Forthcoming Scientific Books, 579; a Manual of Electrical Science, Geo. J. Burch, 588; the Use of Scientific Terms, Prof. W. R. Fisher, 590; the Use of Scientific Terms, Prof. J. Burdon Sanderson, F.R.S., 613  
 Scintillation of Stars, M. Dufour, 600; David Wilson Barker, 614  
 Slater (P. L., F.R.S.), the Jelly-Fish of Lake Urumiah, 294  
 Scorpions, Notes upon the Habits of some Living, R. I. Pocock, 104  
 Scotographoscope, C. Carus-Wilson, 64  
 Scott (John), Prize Awards, 376  
 Scott (R. H., F.R.S.), Fogs in British Islands, 239; Weather Forecasts, 543  
 Scribner's Magazine, Science in, 444  
 Scudder (Samuel Hubbard), Brief Guide to the Common Butterflies of the United States and Canada, the Life of a Butterfly, 338  
 Sea, Numerous Insects Washed up by the, Sophie Kropotkin, 370; Oswald H. Latter, 392  
 Sea-Surface, Oil Spreading on, Prof. Overbeck, 181  
 Sea-Water (Atlantic and Mediterranean), Density and Alkalinity of, J. Y. Buchanan, 168  
 Seaford, Poistones Found near, Geo. Abbott, 315  
 Searle (A.), Solar Spots and Terrestrial Anticyclone, 239  
 Sécheresse 1893, ses Causes, l'Abbé A. Fortin, 587  
 Sectional Procedure, British Association, 566

- Secular Variations of our Rainfall, on, 367
- Seismology: Seismology in Japan, Prof. John Perry, F.R.S., 136; the Earthquake in Baluchistan, 340; the Annual and Semi-Annual Seismic Periods, Charles Davison, 359; Erdbebenkunde, Dr. Rudolf Hoernes, 363; Etude sur les Tremblements de Terre, Leon Vinot, 363; the Cause of the Great Earthquake in Central Japan, 1891, Prof. B. Koto, 398
- Selborne Society, the, 36
- Selection, Natural, the All-sufficiency of, Prof. A. Weismann, 443
- Selenite in Utah, Dr. Talmage, 286
- Selous (F. C.), Return to Mashonaland of, 426
- Semaphore-Signalling, Statue to Claud Chappe, Inventor of, 297
- Semper (Dr. Carl), Death of, 131; Obituary Notice of, Dr. J. Beard, 271
- Sensitive Spherometer, Dr. A. A. Common, F.R.S., 396
- Serpent d'Eau of the Rhône at Geneva, the, H. Saye, 584
- Serpent's Tongue, the, W. H. Hudson, 350
- Sexual Colouration of Birds, F. C. Headley, 413
- Shadbolt (W. P.), Artificial Horizon, 510
- Shafarik (D. A.) on Specula for Reflecting Telescopes, 528
- Shakespeare's Russet-pated Choughs, the Identity of, J. E. Harting, 445
- Sharp (Dr. D., F.R.S.), the Sound-producing Organs of Ants, 64
- Sharp (David), Zoology of the Sandwich Islands, 574
- Sharpe (R. Bowdler), an Analytical Index to the Works of the late John Gould, F.R.S., 100
- Sharpe (T. A.), What becomes of the Aphis in the Winter? 77
- Sheldon (Prof.), the Future of British Agriculture, 174
- Shell-bearing Clays of Clava in Nairn, Investigation into the, Dugald Bell, 532
- Shensone (W. A.), Apparatus for Studying Action of Electric Discharge on Oxygen, 159; Formation of Ozone (ii.), 190
- Sherrington (Dr. C. S.), Correlation of Action of Antagonistic Muscles, 141
- Shields (John), the Variations of Surface Energy with Temperature, 21; Boiling and Melting Points of Nitrous Oxide, 22
- Shipley (Arthur O.), Zoology of the Invertebrata, 173
- Siberia, Northern, the Kara Sea Route to, 380
- Siebert (Dr.), a Method of Preparing Nitrites in a State of Purity, 39
- Silver and its Haloid Compounds, Electrical Action of Light upon, Col. Waterhouse, 423
- Sime (John), Sir Francis Ronald's Experiments in Electric Telegraphy, 325
- Simonoff (Dr.), a Simple Optical Photometer, 12
- Simplified Multiplication, Lieut.-Col. Allan Cunningham, 316
- Simpson (W. S.), Method of Preserving Water-colour Drawings, 297
- Sinaitic Peninsula, the, Prof. Sayce, 301
- Skate, the Electric Organ of the, J. C. Ewart, 93
- Skertchly (Sydney B. J.), the Cold Wave at Hong Kong, January, 1893, its After-Effects, 3
- Slickensides, J. Allen Howe, 315
- Small (Mr.), the Igneous Rocks of South Pembrokeshire, 532
- Smith (Rev. F. J.), Inductoscript, 64; a Periodic Mercury Pump, 320
- Smith (H. H., and G. W.), Botanical Exploration of St. Vincent, 544
- Smithell's (Prof.) Experiments to Demonstrate Structure of Flames, 64
- Smithson (T. Spencer), the Definition of Heredity, 413
- Smithsonian Institution Documents, Prof. Cleveland Abbe, 6
- Smithsonian Report for Year ending 1892, 184
- Smithsonian Institution: Bolton's Select Bibliography of Chemistry, 446
- Smithsonian Institution: Hodgkins Fund Prizes, Prof. S. P. Langley, 618
- Smokes of Paris, M. Foubert's Map of, M. Delahaye, 78
- Smyth (B. B.), Difficulty of Determining Plants by Local Names, 37
- Snakes: Cobras Attracted by Remains of Dead Cobra, 79
- Snakes, Catalogue of the, in the British Museum, George Albert Boulenger, W. T. Blanford, F.R.S., 313
- Snell (A. B.), Water Power as a Source of Electricity, 557
- Snow Crystals, the Inner Structure of, G. Nordenskiöld, 592
- Snowballs, Fall of, in Saxony, Dr. Paul Schreiber, 11
- Soaring of Hawk, F. C. Constable, 223
- Société d'Encouragement pour l'Industrie Nationale: Prize Awards, 569
- Societies' Club, Proposed Learned, 322
- Society of Chemical Industry, Sir John Evans, Treas. R.S., 279
- Soil in Relation to Health, the, H. A. Miers and R. Crosskey, 196
- Solanum, Insects Attracted by, Prof. J. D. A. Cockerell, 438
- Solar Climates, Geological and, their Causes and Variation, Marsden Manson, 588
- Solar Eclipse, Total (April, 1893), 40; Prof. T. E. Thorpe, F.R.S., 53; M. Deslandres, 81; M. N. Coculesco, 135
- Solar Eclipses, Total, 355
- Solar and Lunar Ephemeris for Turin, 548
- Solar Observations at the Royal College, Rome, Prof. Tacchini, 158
- Solar Radiation, Report of the Committee on, 525
- Sollas (Prof. W. J., F.R.S.), the Granophyre of the Carlingford and Morne Mountains, 109; the Igneous Rocks of Barnave, Carlingford, 532; the Esker Systems of Ireland, 533; Coral Reefs, 575
- Soot-Figures on Ceilings, Dr. A. Irving, 29; Dr. Hugh Robert Mill, 29; Lieut.-Col. Allan Cunningham, 29; E. B. Poulton, F.R.S., 29; J. Edmund Clark, 77
- Soret (M.), the Rotatory Power of Quartz at Low Temperatures, 230
- South Polar Cap of Mars, Prof. George Comstock, 15
- Space, the Sun's Motion through, 208
- Spain, Afterglows in, Prof. Augusto Arcimis, 29
- Spangolite, a Remarkable Cornish Mineral, H. A. Miers, 426
- Spearman (E. R.) Criminals and their Detection, 249
- Specific Energies of the Organism, the, J. S. Burdon Sanderson, F.R.S., 467
- Spectrum Analysis: Method of Obtaining Determination of Refractive Index of Atmosphere for Every Portion of Photographic Spectrum, Messrs. Kayser and Runge, 60; Atomic Refraction of Nitrogen, Prof. Brüche, 60; Spectra of Flame from Bessemer Converter, Prof. W. N. Hartley, F.R.S., 64; Cause of Luminosity of Heated Gases, Dr. Pringsheim, 144; Geometrical Construction of Oxygen Absorption Lines and Solar Spectrum, Geo. Higgs, 164; Oxyhydrogen Blowpipe Spectra, W. N. Hartley, F.R.S., 165; Stars having Peculiar Spectra, 208; Stars with Remarkable Spectra, T. E. Espin, 233; the Corona Spectrum, J. Evershed, 268; Changes in the Spectrum of  $\beta$  Lyrae, 301; the Spectrum of the Rordame-Quénisset Comet, Prof. Campbell, 379; Nova (T) Aurigæ Spectrum, W. W. Campbell, 524; Periodical Maxima of Spectra, M. Aymonnet, 536
- Spée (M.), the Lunar Atmosphere, 62
- Speech-Production, the Methods of, Profs. von Helmholtz and Fränkel, 407
- Specula for Reflecting Telescopes, on, Dr. A. Shafarik, 528
- Spherometer, a Sensitive, Dr. A. A. Common, F.R.S., 396
- Spitaler (Dr. Rudolf) Observations of Nebulae, 184
- Spontaneous Combustion, Prof. Vivian B. Lewes, 626
- Sprigge (Dr. S. S.), the Poisoning of the Future, 250
- Spring, the Early, of 1893, W. B. Crump, 414
- Spring and Autumn of 1893, Right Hon. Sir Edward Fry, F.R.S., 509
- Stagnitta-Balestreri, Micro-Organisms producing Sulphuretted Hydrogen, 352
- Stainton Collection of Lepidoptera, Lord Walsingham, 322
- Stairs (Capt.), Katanga Expedition, Dr. Moloney, 135
- Starch of the Chlorophyll Granule and the Chemical Processes involved in its Dissolution and Translocation, Horace T. Brown, F.R.S., 576
- Stars: Variable Star Nomenclature, 81; Variable Stars, 301; the Star  $\gamma$  Cygni, Prof. N. C. Dunér, 301; New Variable Stars in Cygnus, Herr Fr. Deichmüller, 573; Stars having Peculiar Spectra, 208; Stars with Remarkable Spectra, T. E. Espin, 233; Grouping of Stars into Constellations, 370; Atmospheric Refraction and Star Photographs, Prof. A. A. Rambaut, 379; Origin of New Stars, Prof. A. W. Bickerton, 379; Prof. Hoffmann, 402; Double Star Measures, 512; Shooting Stars of August, 1893, P. F. Denza, 535; the Scintillation of Stars, M. Dufour, 600; David Wilson Barker, 614
- Statue of Arago, a New, 223
- Stead (J. E.), the Elimination of Sulphur from Iron and Steel, 113
- Steam, Electrolysis of, J. J. Thomson, F.R.S., 70



- Steam Engine, a Handbook on the, Herman Haeder, N. J. Lockyer, 314
- Stebbing (Mr.), Coral Reefs, 576
- Steel, Rustless, H. G. Fourcade, 590
- Steering Methods, Birds', F. A. Lucas, 414; F. W. Headley, 293
- Sternberg (George M.), a Manual of Bacteriology, 172
- Stevenson (Prof. J. J.), on the Use of the Term Catskill, 462
- Stocks (H. B.), Fossils in "Coal Balls," 72
- Stokes (Mr.), Explosions in Mines, with special Reference to the Dust Theory, 530
- Stokes (Sir G. G.), the Luminiferous Ether, 306
- Stone, the Evolution of Working in, J. D. McGuire, 398
- Stoney (Dr. G. J., F.R.S.), the Cause of Sunspots, 143
- Stracciati (Prof.), Corrected Formula of Heat necessary to Raise a Gramme of Water to C., 299
- Strassmann (Dr. Paul), Mechanism of Closing of Ductus Bagalli, 408
- Strauch (Dr. Alexander), Death of, 481
- Strauss's Method of Colouring Cilia of Living Micro-Organisms, 621
- Streintz (Franz), Contributions to the Theory of Secondary Batteries, 333
- Stuart-Glennie (J. S.), Racial Dwarfs in the Pyrenees, 294
- Styria, Middle, Disastrous Cloud-Burst in, 351
- Submarine Cable laid between Queensland and New Caledonia, 623
- Submarine Cables and Submarine Borers, W. H. Preece, F.R.S., 160
- Submarine Photographs, Louis Boutan, 377
- Succession of Teeth in Mammals, the, Prof. H. F. Osborn, 238
- Suicide of Rattlesnakes, the Supposed, Edward S. Holden, 342; Prof. E. Ray Lankester, F.R.S., 369, W. H. Wood, 391; E. L. Garbett, 438
- Summer of 1893, J. Lloyd Bosward, 614
- Sumpner (Dr.), Photometry, 190
- Sun, Moon, and Stars: Astronomy for Beginners, A. Gilberne, 101
- Sun, the Coronal Atmosphere of the, 301
- Sun's Motion through Space, the, 208
- Sun's Way, the Apex of the, Prof. H. G. van de Sande Bak-huyzen, 401
- Sunlight in the High Alps, the Iodine Value of, Dr. S. Rideal, 529
- Sunspots, the Cause of, Dr. G. J. Storey, F.R.S., 143
- Sunspots and Solar Envelopes, 526
- Sunday Magazine, 350
- Superstition, Surgery and, Frank Rede Fowke, 87
- Surface, the Moon's, G. K. Gilbert, 82
- Surface-Tension, Relations between the, and Relative Contami-nation of Water Surfaces, Miss Agnes Pockels, 152
- Surgery and Superstition, Frank Rede Fowke, 87
- Surgical Infection, the Microbian Origin of Purulent, S. Arloing and E. Chantre, 407
- Survey of England, the Archæological, 272
- Survey for 1892, Report of Indian, 510
- Suter (H.), the Land and Freshwater Mollusca of New Zealand, 182
- Swarms of Amphipods, Prof. W. A. Herdman, F.R.S., 28
- Swarms of Flies, Singular, R. E. Froude, 103, 176; Prof. F. Jeffrey Bell, 127; Henry Cecil, 127; Baron C. R. Osten Sacken, 176
- Swan (J. W.), a New Method of Electrolytic Copper Bright Depositing, 160
- Swan (R. M. W.), Discovery of Temple on the Limpopo, 426
- Swimmer, a Substitute for Ampère's, Alfred Daniell, 294; Hanna Adler, 370
- Swinburne (James), the Publication of Physical Papers, 197; Alex. P. Trotter, 412
- Swinburne (Mr.), Dr. Lodge's Foundation of Dynamics, 166; Photometry, 190
- Swinhoe (Col.), Locust Plagues, 95
- Swinton (A. A. C.), High Frequency Electric Experiments, 63
- Switzerland, a Hand-book for Travellers in, 314
- Sydney, Linnean Society of New South Wales, 406, 584
- Sydney, Royal Society of New South Wales, 335, 536, 584
- Syechenov (J. M.), Alkalies of Blood and Lymph, 188
- Syetchenoff (I. M.), Analogy between Solution of a Gas and of a Salt in Indifferent Solutions of Salts, 91
- Sykes (John F. J.), Public Health Problems, 27
- Symonds (Mrs. John Addington), some Further Recollections of a Happy Life, Selected from the Journals of Marianne North, chiefly between the Years 1859 and 1869, 291
- Symons's Monthly Meteorological Magazine, 607
- Szuhay (Dr.), Iodide of Nitrogen, 547
- Tacchini (Prof.), Solar Observations at the Royal College, Rome, 158
- Tagliafico (N.), Lignite Found in Blue Upper Globigerina Limestone at Malta, 156
- Tait (Sir P. G.), some Points in the Physics of Golf, 202
- Talmage (Dr.), Selenite in Utah, 286
- Tanner (Prof. Lloyd), Supplementary Note on Complex Primes formed with the Fifth Roots of Unity, 95
- Tarn (E. Wyndham), the Mechanics of Architecture, 515
- Tasmania, Educational Status of, 232
- Tasmania, the Climate of Eastern, Rev. F. R. M. Wilson, 424
- Tavel (Dr. F. Von), Vergleichende Morphologie der Pilze, Prof. H. Marshall Ward, F.R.S., 224
- Taylor (H. M.), a Graphical Representation of the Twenty-seven Lines on a Cubic Surface, 310
- Teall (J. J. H., F.R.S.), Opening Address in Section C of the British Association, 486
- Technical Educator, the New, 388
- Teeth in Mammals, the Succession of, Prof. H. F. Osborn, 238
- Telegony, 590; Dr. Geo. J. Romanes, F.R.S., 515; Prof. Weismann, 543
- Telegraphy, Sir Francis Ronalds's Experiments in Electric, John Sime, 325
- Telephone Lines and their Properties, William J. Hopkins, Francis G. Baily, 99
- Telephones, Excursion of Diaphragms of, Messrs. Cross and Mansfield, 156
- Telescope for Cambridge Observatory, Proposed New, 358
- Telescope, the Newall, 233
- Telescope, the Yerkes, 184
- Telescope Stand, a Universal, 600
- Telescopes, on Specula for Reflecting, Dr. A. Shafarik, 528
- Temperature, Oyster-Culture and, Prof. W. A. Herdman, F.R.S., 267
- Temperature, Variation of Temperatures of Transformation below and above Critical, P. de Heen, 406
- Temple and Pyramid Builders, on the Early, J. Norman Lockyer, F.R.S., 55
- Temple Orientation in Greece, the Influence of Egypt upon, J. Norman Lockyer, F.R.S., 417
- Temples, the Orientation of Greek, F. C. Penrose, 42
- Temples, Orientation of, by the Pleiades, R. G. Haliburton, 566
- Tercentenary of the Admission of William Harvey to Gonville and Caius College, Cambridge, 199
- Tertiary and Triassic Gastropoda of the Tyrol, Dr. J. Dreger, 567
- Tesla (Nikola), on Light and other High Frequency Phenomena, 136
- Tête Rousse Glacier and St. Gervais Catastrophe, Changes in A. Delebecque and L. Duparc, 407
- Thames, Wreck-Raising in the, C. J. More, 78
- Thebes, the Astronomical History of On and, J. Norman Lockyer, F.R.S., 318, 371
- Thél (Prof. Hjalmar), the Development of *Echinocyanus pusillus*, 330
- Therapeutics: Physiological and Therapeutic Effects of Injection of Orchitic Liquid, MM. Brown-Séquard and d'Arsonval, 23; Artificial Immunity and Typhoid Fever, 211
- Thermodynamics: Die Thermodynamik in der Chemie, J. J. Van Laar, 220; Superior Limit of Wave-Lengths in Thermal Radiation of Solids, Willy Wien, 406; the Decomposition of Energy into Two Factors, W. Meyerhoffer, 523; British Association Report on Thermodynamics, G. H. Bryan, 616; the Third Principle of Energetics, H. Le Chatelier, 632
- Thermometer Soundings in the High Atmosphere, W. de Fonvielle, 160
- Thermometer Liquids, New, Herr von Lupin, 208
- Thermometers, Sodium Potassium, High Temperature, E. C. Baly and J. C. Chorley, 63
- Thieving of Antiquities, the, Prof. W. M. Flinders-Petrie, 613
- Thieving of Assyrian Antiquities, the, 343, H. Rassam, 508, 540
- Thin Liquid Films, Thickness and Electrical Resistance of, A. W. Reinold, F.R.S., 115; Thickness and Electrical Conductivity of, A. W. Reinold, F.R.S., 624

- Thiselton-Dyer (W. T., F.R.S.), the Royal Society, 247; the Royal Society Election, 121; University and Educational Endowment in America, 248; Obituary Notice of Alphonse de Candolle, 269
- Thomas (O.), the Mammals of Trinidad, 37
- Thomas (P. A.), Enunciations in Arithmetic, Euclid, and Trigonometry, 564
- Thompson (Prof. J. J.), a New Form of Air Pump, 529
- Thompson (Joseph O.), on Fatigue in the Elasticity of Stretching, 461
- Thompson (Prof. Silvanus D.), Dr. Lodge's Foundation of Dynamics, 166; Notes on Photometry, 190; Dynamo Electric Machinery, 193
- Thomson (J. J., F.R.S.), Electrolysis of Steam, 70; the Effect of Water Vapour on Electrical Discharges, 605
- Thorpe (Prof. T. E., F.R.S.), the late Solar Eclipse, 53; Dictionary of Applied Chemistry, 145; Explosions in Mines with Special Reference to the Dust Theory, 530
- Throwing Stick, the Mexican Atlatl or, O. T. Mason, 579
- Thrush, Imitation or Instinct by a Male, E. Boscher, 369
- Thrush Fungus, the, Marantonio, 622
- Thunderbolt in Warwickshire, L. Cumming, 342
- Thunderstorm Phenomena on the Matterhorn, Walter Larden, 316
- Tides of Bay of Fundy, Gustav Kobbé, 444
- Tiemann (F.), the Glucoside of the Iris, 560
- Tillie (Dr. Joseph), the Arrow-Poison of East Equatorial Africa, 92
- Tillo (General de), the Magnetic Elements of Lagastyr, 584
- Time, France and International, W. de Noedding, 330
- Time, Railway, in Italy, 481; Adoption of Central European Time, 619
- Time, Universal, in Australia, 484
- Time-Reckoning for Australia, the Home-Zone System of, 601
- Tinctorial Art and Science, Prof. R. Meldola, F.R.S., 170
- Titanium, Cyano-Nitride of, T. W. Hogg, 529
- Tobacco Culture in Trinidad, 275
- Tomes (R. F.), New Genus (*Stylosieris*) of Madreporaria from Sutton Stone of South Wales, 286
- Tongue, the Serpent's, W. H. Hudson, 350
- Topley (W., F.R.S.), on the Relationship between Physical Geography and Geology, 554
- Tornado, a Dust Whirl or? J. Lovel, 77
- Total Solar Eclipse (April, 1893), Prof. T. E. Thorpe, F.R.S., 40, 53; M. Deslandres, 81; M. N. Coculesco, 135
- Total Solar Eclipses, 355
- Toxicologiques, Traité Pratique d'Analyse Chimique et de Recherches, G. Guérin, 221
- Toxicology; the Arrow-Poison of East Equatorial Africa, Dr. T. R. Fraser, F.R.S., and Dr. Joseph Tillie, 92
- Trambusti (Signor), Susceptibility of Micro-Organisms to Various Strengths of Disinfectants, 352
- Trans-Siberian Savages, Life with, E. Douglas Howard, 339
- Transit of Venus of 1874, the, 447
- Transmission of Telephone Currents, William J. Hopkins, Francis G. Baily, 99
- Traugott (Herr), Bactericidal Action of Peroxide of Hydrogen, 599
- Triassic Gastropoda of the Tyrol, Tertiary and, Dr. J. Dreger, 567
- Trichinosis, Dr. P. Cerfontaine, 332
- Trieste, Temperature Waves at, 1871-90, Ed. Mazelle, 297
- Trilobites with Antennæ at last! H. M. Bernard, 582
- Trinidad, the Mammals of, O. Thomas, 37
- Trinidad, Tobacco-Culture in, 275
- Tristram (Rev. H. B., F.R.S.), Opening Address in Section D of the British Association, 490
- Troost (L.), Preparation of Thorium and Zirconium, 144
- Trotter (A. P.), a New Photometer, 190; the Publication of Physical Papers, 411
- Tromp (Herr van), Bactericidal Action of Peroxide of Hydrogen, 599
- Trouessart (Dr. E. L.), Au Bord de la Mer; Géologie, Faune et Flore des Côtes de France, 74
- Trouton (F. T.), on a Peculiar Motion assumed by Oil Bubbles in ascending Tubes containing Caustic Solutions, 529
- Trouvé (M.), Luminous Fountains on a Small Scale, 12
- Trowbridge (John), Oscillations of Lightning Discharges and Aurora Borealis, 535, 571
- Tubulane, a Caucasian Truffle, A. Chatin, 407
- Tucheler Haide, the, R. Schütte, 570
- Tunis, Geographical Society established at, 356
- Tupaja Javanica, Trophoblast of, M. Hubrecht, 168
- Turacin, a Remarkable Animal Pigment containing Copper, Prof. A. H. Church, F.R.S., 209
- Turbellariæ of the Black Sea, Dr. Sophie Pereyaslawzewa, 109
- Turin, the Climate of, Dr. Rizzo, 108
- Turin Osservazioni Meteorologiche, 570
- Turin, Solar and Lunar Ephemeris for, 548
- Tutton (A. E.), Nitro-Metals, a New Series of Compounds of Metals with Nitrogen Peroxide, 524
- Types of Animal Life, St. George Mivart, F.R.S., 148
- Tyrol, Tertiary and Triassic Gastropoda of the, Dr. J. Dreger, 567
- Typhoid Bacillus, Stimulative Action of other Bacilli upon, 274
- Typhoid Fever, Artificial Immunity and, 211
- Typhoon of October 7-10, 1892, the Rev. S. Chevalier, 456, 522
- Typhoons of China Sea, Dr. W. Doberck, 376
- United States and Canada, Brief Guide to the Common Butterflies of the, Samuel Hubbard Scudder, W. F. Kirby, 338
- United States Weather Bureau, Report for 1892, 377
- United States, the Ox Bot-fly in the, Prof. C. V. Riley, 378
- United States Army, Index Catalogue of the Library of the Surgeon-General's Office, Dr. A. T. Myers, 611
- Uganda, Proposed Exploration of, Mr. Scott Elliott, 444
- Universal Atlas, the, 147
- Universal Attraction, New Determination of the Constant of, 301, 355
- University College; Opening of the New Engineering and Electrical Laboratories, 107
- University and Educational Endowment in America, W. T. Thiselton-Dyer, F.R.S., 248
- University Intelligence, 20, 44, 69, 114, 140, 187, 215, 238, 258, 284, 309, 331, 358, 383, 406, 431, 455, 559, 583, 606, 631
- University, Melbourne, the Decreased Grant to, 228
- Utah, Selenite in, Dr. Talmage, 286
- Vapour, the Effect of Water, on Electrical Discharges, Prof. J. J. Thomson, 605
- Variable Star Nomenclature, 81
- Variable  $\alpha$  Cygnus, a New, 183
- Variable Star  $\gamma$  Cygni, the, Prof. N. C. Dunér, 301
- Variable Stars, 301
- Variable Stars, New, in Cygnus, Herr Fr. Deichmüller, 573
- Variations of Latitude, Prof. C. L. Doolittle, 451
- Variations of our Rainfall, on Secular, 367
- Vaschy (M.), a General Property of any Field not admitting of a Potential, 192
- Vasey (Dr. George), Grasses of the Pacific Slope, including Alaska and the adjacent Islands, 411
- Vatican Observatory, Pubblicazioni di, 180
- Vectors and Quaternions, Prof. Alexander Macfarlane, 75, 540; Prof. C. G. Knott, 148, 516; Alfred Lodge, 198
- Vector Analysis, Quaternions and, Prof. J. Willard Gibbs, 364
- Veeder (Dr. M. A.), the Observation of Auroræ, 355; Aurora of July 15, 1893, 573; Fluctuations in Latitudes of Storm Tracks, 598
- Veley (V. H.), Chemical Change, 149
- Velocity of Propagation of Gravitation Effects, on the, S. Tolver Preston, 103
- Ventilating, Warming and, Frank Ashwell, 556
- Vennukoff (M.), Magnetic Observations recently made in Russia, 512
- Venus, the Planet, Ellen M. Clerke, 447
- Venus, the Greatest Brilliance of, Dr. G. Müller, 61
- Venus, the Period of Rotation of, 233
- Venus, the Transit of, of 1874, 447
- Venus, the Visibility of, to the Naked Eye, 623
- Verner (M.), an Explanation of Rotation of Plane of Polarisation in Magnetic Field based on De Reusch's Experiments, 78
- Vertebrate Ear, the Morphology of the, Howard Ayers, 184
- Vertebrate Embryology, A. Milnes Marshall, Prof. E. Ray Lankester, F.R.S., 265
- Vertebrate Fauna of Argyll and the Inner Hebrides, J. A. Harvie-Brown and T. E. Buckley, 123
- Veterinary College, Royal, Thomassen's Treatment of Acti-

- nomycosis in Heifer, 91; Experiments with Koch's Tuberculin and Kalning's Mallein, 91  
 Veterinary Science, Inoculation for Glanders, 273  
 Victoria, Cattle-Poisoning Species of *Homeria* (Cape Tulip), in, Dr. McAlpine, 378  
 Victoria, Observations of the Planet, Dr. Gill, 276  
 Vienna, Anemometrical Observations (1873-1892) at, Dr. J. Hann, 108  
 Vienna and Greenwich, Difference of Longitude between, 277  
 Vignoli (Prof. T.), Remarkable Case of Resuscitation of an Optical Image, 545  
 Viguier (Dr. M.), Inaccuracy of French Elementary Geographical Text-Books, 382  
 Village, Birds in a, W. H. Hudson, 409  
 Villard (M.), a Highly Sensitive Manometer, 132  
 Villemontée (Gouré de), Attempts to Prepare Metallic Surfaces giving a Constant Difference of Potential, 78  
 Vine-Leaves as Cattle-Food, A. Muntz, 168  
 Vines (Father R. P.), Death of, 421  
 Vinot (Leon), Etude sur les Tremblements de Terre, 363  
 Visibility of Venus to the Naked Eye, the, 623  
 Vision, Charpentier's Experiments Demonstrative of an Oscillatory Process in the Organ of, and of its Dimensions, 380  
 Viticulture, Schist-impregnated Peatmoss Treatment of Phylloxera, F. de Mély, 512; a New Enemy of the Vine, *Blanyulus guttulatus*, M. Fontaine, 632  
 Vivisection, Lord Coleridge and, Prof. Percy F. Frankland, F.R.S., 268  
 Vivisection, Cecil Carus-Wilson, 317  
 Voigt (Herr W.), Attempt to Determine greatest Possible Number of Physical Constants of some Pieces of Metal subject to least Mechanical Manipulation, 422  
 Volcanoes, Outbreak at Fukushima, Japan, 179; Recent Eruptions in Fukushima District, Japan, 398; Rise of Lava in Crata of Etna, Dr. Johnston-Lavis, 179; on the Dissected Volcano of Crandall Basin, Wyoming, Prof. J. P. Iddings, 531; Eruption near Calbuco, Chili, 618  
 Voles, Field, Aristotle on, 37  
 Voles, the Plague of Field, 282  
 Waals (M. van der), Formula for Law of Molecular Force, 168  
 Waldo (Frank), Modern Meteorology, 97  
 Walford (E. A.), Cheilostomatous Bryozoa from Middle Lias, 286  
 Walker (Alfred O.), the Use of Ants to Aphides and Coccidae, 54  
 Walker (C. H. H.), Products of Interaction of Tin and Nitric Acid, 94  
 Walker (G.), Boiling Points of Homologous Compounds, I., Ethers, 191  
 Walker (James), the Conditions Determinative of Chemical Change, some Comments on Prof. Armstrong's Remarks, 267  
 Walker (J. J., F.R.S.), Displacement of Rigid Body in Space by Rotation, 311; a Correction, 317  
 Walker (O. E.), the Cause of Earth Currents, 60  
 Wallace (Dr. Alfred R., F.R.S.), H. O. Forbes' Discoveries in the Chatham Islands, 27; the Intelligence of Animals, Charles William Purnell, 73; the Glacier Theory of Alpine Lakes, 198; Non-Inheritance of Acquired Characters, 267; Prenatal Influences on Character, 389; Habits of South African Animals, 390; the Supposed Glaciation of Brazil, 589  
 Wallaschek (Richard), Primitive Music: An Inquiry into the Origin and Development of Music, Songs, Instruments, Dances, and Pantomimes of Savage Races, Prof. C. Lloyd Morgan, 290  
 Wallis (F.), the Dynamo, Prof. A. Gray, 244  
 Walsingham (Lord), the Stainton Collection of Lepidoptera, 322  
 Walton (Izaak), Proposed Centenary Memorial of, 179  
 Ward (Herbert), Ethnographical Notes on the Congo Tribes, 558  
 Ward (Prof. H. Marshall, F.R.S.), Modern Mycology, 224  
 Ward (Lester F.), Frost Freaks, 214  
 Warming and Ventilating, Frank Ashwell, 556  
 Warwickshire, Thunderbolt in, L. Cumming, 342  
 Washburn Observations, 135  
 Washington, Anthropological Society of, Prize Subjects for 1893, 229  
 Wasps, J. Lloyd Bozward, 459  
 Wasps in Southern Counties, Plague of, 351  
 Wasps' Nest, a, 437  
 Watchmaking by Machinery, T. P. Hewitt, 556  
 Water Bacteria, Dr. Alexander Lustig, Mrs. Percy Frankland, 386  
 Water, Crystallisation of, by Decompression below Zero, E. H. Amagat, 632  
 Water Power as a Source of Electricity, A. B. Snell, 557  
 Water-Spouts at Antibes, Four Simultaneous, M. Naudin, 360  
 Water-Supply, System of Reservoirs for Industrial Purposes in Alsatian Vosges, 62  
 Water-Supply, Source of Nottingham, Prof. E. Hull, 532  
 Water Surfaces, Relations between the Surface-Tension and relative Contamination of, Miss Agnes Pockels, 152  
 Water Vapour, the Effect of, on Electrical Discharges, Prof. J. J. Thomson, 605  
 Water and Ice as Agents of Earth Sculpture, James Geikie, F.R.S., 385  
 Water-Colour Drawing, Method of Preserving, W. S. Simpson, 297  
 Waterhouse (Col.), Electrical Action of Light upon Silver and its Haloid Compounds, 423  
 Watts (W. W.), Irish Petrology, 532  
 Wazer (H.), on Nuclear Structures in the Hymenomyces, 576  
 Weariness, the Rede Lecture, Prof. Michael Foster, Sec. R.S., 178  
 Weather, Abnormal, in the Himalayas, F. C. Constable, 248  
 Weather Forecasts, R. H. Scott, 543  
 Weather Prophesying, l'Abbé A. Fortin, 587  
 Webber (W. J. van), Earth Temperatures at Hamburg, 1886-91, 284  
 Weight at Increasing Altitudes, Experiments on Diminution of, Dr. Krigar-Menzel, 288  
 Weismann (Prof. A.), the All-sufficiency of Natural Selection, 443; the Teleonomy Theory, 543  
 Weismannism, a Difficulty in, Resolved, Prof. Marcus Hartog, 28, 77  
 Weld (L. G.), a Short Course in the Theory of Determinants, 612  
 Wetterbüchlein, Leonhard Reynman, 389  
 Wettstein (Dr. H.), the Elements of Natural Science, 612  
 Wheeler (H. L.), Series of Well-Crystallising Double Halogen Salts of Tellurium with Potassium, Rubidium, and Calcium, 80  
 White (Gilbert), Proposed Monument to, 131; Centenary of, 212  
 White (Walter), Death and Obituary Notice of, 296  
 White (William), Sagacity in Horses, 199  
 Whitehead, John, Exploration of Mount Kina Balu, North Borneo, 564  
 Whitney (A. W.), Peculiar Phenomenon of Light-Refracton on Snow, 60  
 Whympy (Edward), the Corry "Protected Aneroid," 160  
 Wicksteed Testing Machine, the, Prof. Robinson, 557  
 Wiedemann's Annalen der Physik und Chemie, 91, 140, 259, 333, 406, 422, 607  
 Wiedemann (E.), the Production of Electric Oscillation and their Relations to Discharge Tubes, 91; Electrical Discharges, 140; Luminous Phenomena in Vessels filled with Rarefied Gas under Influence of Rapidly-Alternating Electric Fluids, 607  
 Wien (Willy), Superior Limit of Wave-Lengths in Thermal Radiation of Solids, 406  
 Wiener (O.), Method of Optically Studying Process of Diffusion in Liquids, 109  
 Wille (Dr. A.), a Curious Optical Phenomenon, 391  
 Williams (Joseph W.), Aids to Biology, 26  
 Williams, Collection of Minerals, the, L. Fletcher, F.R.S., 357  
 Willis (Bailey), Conditions of Appalachian Faulting, 631  
 Willis (J. C.), Flora of Pollard Willows, near Cambridge, 143; the Fungus Gardens of certain South American Ants, 362  
 Wilson (E.), Magnetic Viscosity, 165  
 Wilson (Rev. F. R.M.), the Climate of Eastern Tasmania, 424  
 Winshurst's (J.), Influence Machine, 263  
 Wind, the Chinook, H. M. Ballou, 21



- Winkelmann (A.), Specific Heats of Glasses of Various Compositions, 333  
 Winslow (Arthur), History of the Mapping of Missouri, 548  
 Women, the Brain of, Prof. L. Büchner, 350  
 Women, Research Laboratories for, Prof. A. W. Rücker, F.R.S., 590  
 Wood (W. H.), Supposed Suicide of a Rattlesnake, 391  
 Woodlands, the Protection of, 337  
 Woodward (C. J.), Sound Interference Illustrated, 159; the A B C Five-Figure Logarithms, 564  
 Word Eudiometer, the, Philip J. Hartog, 127  
 World History, Reveries of, from Earth's Nebulous Origin to its Final Ruin; or, the Romance of a Star, T. Mullett Ellis, 411  
 Wragge (Clement L.), a Remarkable Rainfall, 3  
 Wreck-Raising in the Thames, C. J. More, 78  
 Wright (Frank), Photometry, 190  
 Wright (Mark R.), Heat, 315  
 Wronski's Expansion, Prof. Echols, 187  
 Wynne (W. P.), Ortho-, Para-, and Peri-Disulphonic Derivatives of Naphthalene, 262  
 Yale University, the Observatory of, 327  
 Yellowstone Park Waters, the Projected Stocking with Fish of, 424  
 Yerkes Telescope, the, 184  
 Yucca, Pollination of, Prof. C. N. Riley, 523  
 Yule (G. U.), Interference Phenomena in Electric Waves passing through Different Thicknesses of Electrolyte, 261  
 Zabalotny (D.), Animal Phosphorescence, 92  
 Zahorsky (Herr), Tetrachloride of Lead, 232  
 Zapiski (Memoirs) of Novorossian (Odessa) Society of Naturalists, 92  
 Zi-Ka-Wei, near Shanghai, Meteorological Society established at, 352  
 Zoology: Zoological Gardens, Additions to, 15, 39, 61, 81, 111, 134, 158, 183, 208, 232, 254, 276, 300, 326, 355, 379, 401, 425, 447, 483, 511, 524, 548, 573, 600, 622; a Snow Leopard for the Zoological Gardens, 181; Suggested Zoological Garden in Colombo, 510; the Mammals of Trinidad, O. Thomas, 37; Aristotle on Field Voles, 37; the Norway Rat in the Ancient Western World, A. Pomel, 72; Mr. H. O. Forbes' Discoveries in the Chatham Islands, Dr. Alfred R. Wallace, 27; Henry O. Forbes, 74, 126, 174; Prof. Alfred Newton, F.R.S., 101, 150; a Vertebrate Fauna of Argyll and the Inner Hebrides, J. A. Harvie-Brown and T. E. Buckley, 123; Death of Dr. Carl Semper, 131; the Tsarévitch Prize, 154; Lehrbuch der Zoologie, Prof. Richard Hertwig, Zoology of the Invertebrata, Arthur O. Shipley, Prof. E. Ray Lankester, F.R.S., 173; Zoological Society, 46, 71, 118, 167, 263; Report of the Council of the, 283; Publications of the Zoological Station at Naples, Prof. Anton Dohrn, 440; Prof. H. F. Osborn on the Mammals of the Upper Cretaceous, 462; Zoology of the Sandwich Islands, David Sharp, 574; Departure of Dr. Kiikenthal on a Zoological Expedition to Moluccas, 619; Zoological Record for 1892, 621  
 Zoutpansberg Goldfields, the, Fred. Jeppe, 448

